

**SONY®**

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COLOR VIDEO CAMERA

**DXC-327AP**

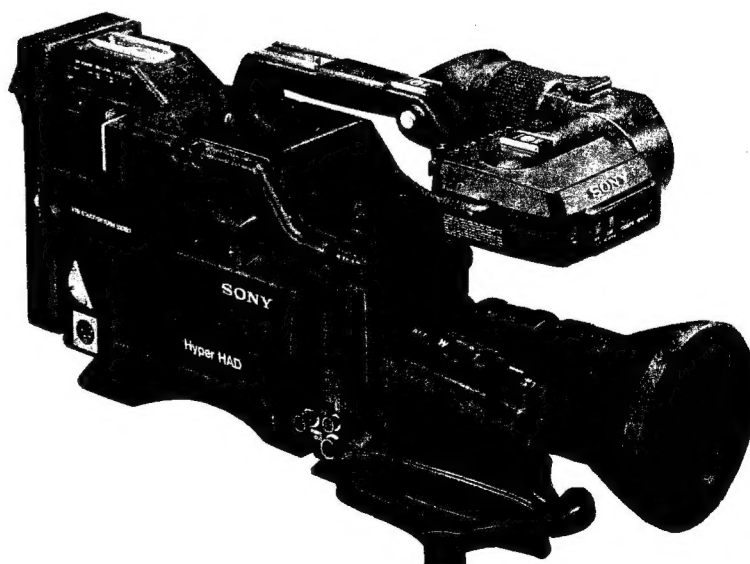
UPGRADE KIT

**DXK-327P**

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SERVICE MANUAL

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DXC-327AP+CA-537P

**Hyper HAD™**

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#### **SAFETY RELATED COMPONENT WARNING**

Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

**Warning**—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC rules.

#### **For the customers in Canada**

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

#### **Pour les utilisateurs au Canada**

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

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## **Volume. 2**

### **A. BLOCK DIAGRAM**

### **B. SEMICONDUCTOR**

### **C. SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS**

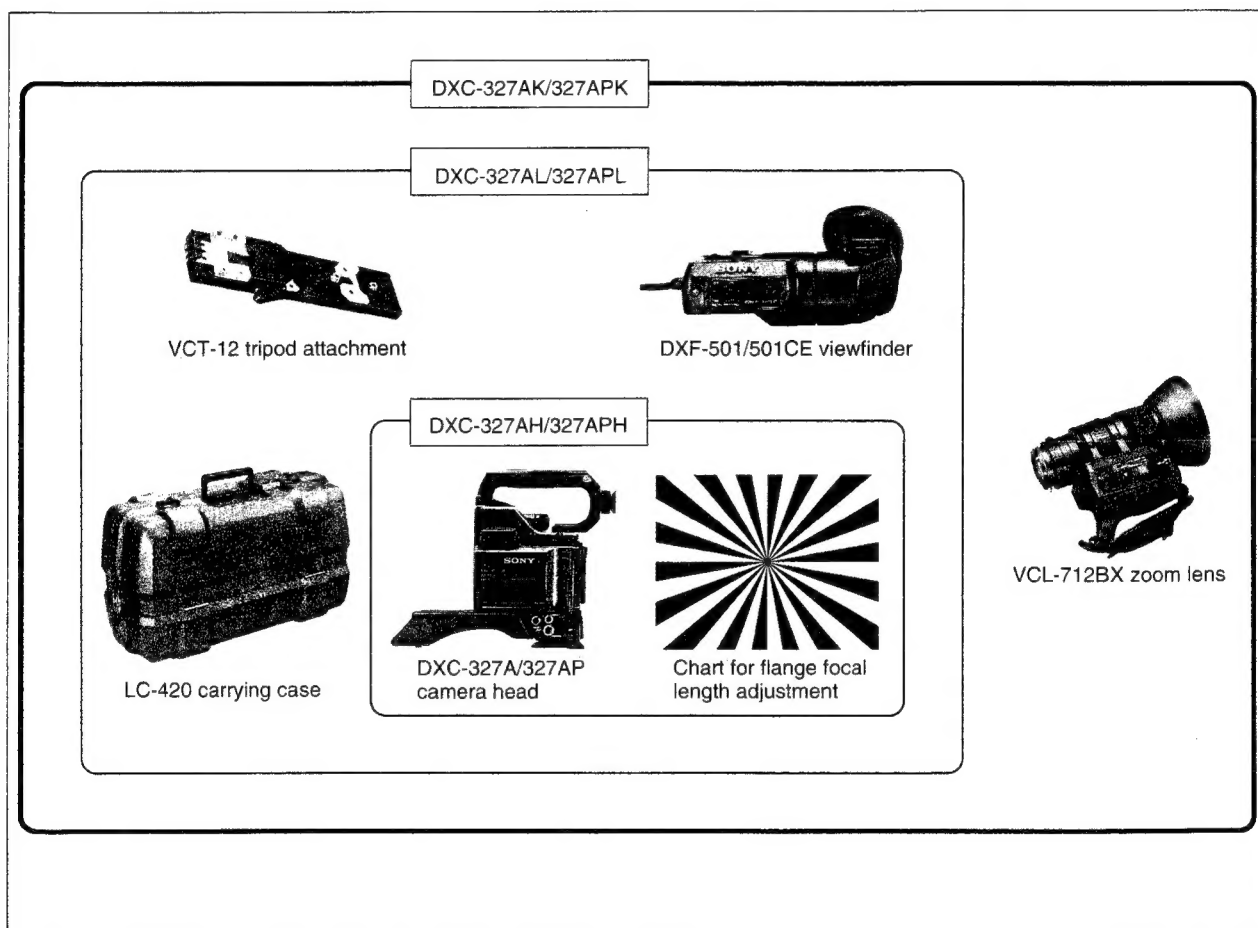
### **D. SPARE PARTS**



## SECTION 1 GENERAL DESCRIPTION

# Introduction

## Composition of the DXC-327A Series Color Video Camera



Composition	Model		
	DXC-327AK/ 327APK	DXC-327AL/ 327APL	DXC-327AH/ 327APH
DXC-327A/327AP camera head	Yes	Yes	Yes
VCL-712BX zoom lens		No	No
DXF-501/501CE viewfinder		Yes	
LC-420 carrying case			
VCT-12 tripod attachment			
Chart for flange focal length adjustment			Yes

## Choosing from NTSC or PAL System

The following explains the differences between the NTSC and PAL system regarding accessory selection for the DXC-327A series camera.

Some PAL components can operate on NTSC equipment and vice-versa. In general, however, this is not the case. You must use the type of equipment and accessories that matches the signal system of your camera. Use the DXC-327A series camera within the NTSC color system, and use the DXC-327AP series camera within the PAL system.

## Notes on Using Accessories with the DXC-327A Series Camera

- If you use the CA-537/537P Camera Adaptor (not supplied) with this camera, operate the camera according to the instructions in this manual.
- If you use the CA-327/327P Camera Adaptor (not supplied), operate the camera according to the instructions that come with the adaptor.
- If you use a zoom lens other than the VCL-712BX zoom lens, operate the camera according to the instructions that come with the lens. (For further information on accessories, see "Optional Accessories and Recommended Equipment", on page I-79.)

# Precautions

## On Using and Storing the Camera

This section explains how to safely use, store and clean the camera.

### When setting up the camera

- Do not attach the zoom lens without reading "Attaching the Zoom Lens and Optional Filter" on page 1-23. Attaching the lens incorrectly may damage the lens.
- Do not directly connect the camera to an AC power line. Use the recommended camera adaptor or use a 12 volt DC power source.
- Do not block air circulation about the camera to prevent internal heat build-up.

### When operating the camera

- Avoid rough handling or mechanical shock.
- Avoid strong magnetic fields to prevent signal distortion.
- Avoid operating the camera in environments that exceed the temperature range of  $-5^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$  ( $23^{\circ}\text{F}$  to  $113^{\circ}\text{F}$ ).
- Do not point the viewfinder directly at the sun.
- Do not grip the camera by the viewfinder.

### When storing and shipping the camera

- Cover the lens with the supplied lens cap when you do not plan to use the video camera for an extended period of time.
- When you transport the camera, repack it as it was originally shipped. Do not discard the packing carton. This affords maximum protection whenever you ship the camera. Do not ship or transport the camera in the carrying case alone.
- Store the camera with the viewfinder moved fully in the direction opposite the viewfinder barrel and the lock ring tightened. (See page 1-26.)

### When cleaning the camera

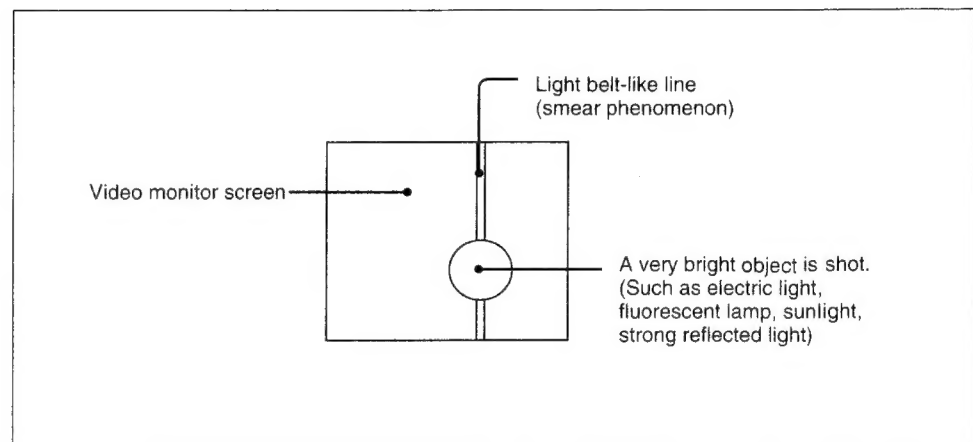
- Clean the cabinet, panel and controls with a soft, dry cloth or a cloth moistened with a mild detergent solution.
- Do not use any type of solvent, such as alcohol or benzine which might damage the finish.

## Managing Hyper-Sensitivity in the CCD Image Sensor

Because of the high sensitivity of the CCD image sensors, the following phenomena may appear on the monitor screen while you are using the DXC-327A series color camera. These phenomena do not mean that there is anything wrong with the camera.

### Vertical smear

Smear tends to happen when an extremely bright object such as an electric light, fluorescent lamp, sunlight, or strong reflection is being shot.



### White dots

White dots may appear in the video output if the camera is used at very high temperatures.

### Aliasing

Aliasing may occur when you shoot fine stripes or straight lines. The lines appear jagged.

### Poor pictures

You may not get a clear picture if the GAIN selector is set to 18 dB when you are using the electronic shutter. Use the electronics shutter under lighting conditions where you can obtain a clear picture with the GAIN selector set to the 0 or 9 dB position.

# Features

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## Hyper HAD™ Sensor CCD Chip Design

The Hyper HAD™ Sensor CCD Chip design employs three 1/2-inch CCD (Charge Coupled Device) images each having a total of about 380,000 (NTSC) or 440,000 (PAL) effective picture elements. The CCD offers better picture quality over tube type pick-up devices by providing;

- higher resolution and sensitivity
- lower lag, higher image burning resistance, and no deflection distortion
- less vibration and magnetic field distortion
- higher S/N ratio that allows you to raise the video output level by 9 dB or 18 dB to get a clear picture under low light conditions.

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## Maximum system versatility

By attaching optional equipment you can expand the usability of the camera:

- the CA-537/537P Camera Adaptor enables you to control the camera via a camera control unit or VTR.
- the CA-325A/325AP or 325B enables multiple outputs of RGB format signal.
- a Hi8 format videocassette recorder or a Betacam format videocassette recorder PVV-1/1P, Pro 2000 series, turns your unit into a camcorder.
- the CCU-M7/M7P Camera Control Unit allow you to use the camera as a studio camera.
- the various kinds of power sources (battery, AC and DC) allow you to use the camera under many power situations.

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## Electronic shutter

The built-in electronic shutter ensures better pictures of fast moving objects with little blurring.

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## Automatic adjustment and memory functions

The camera automatically adjusts white/black balance as well as camera settings, and stores the adjustments for later use.

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## Viewfinder displays

So you don't have to take your eye off what you are shooting, the viewfinder displays adjustment indications and warning. The viewfinder shows the following four displays;

**Characters:** Show switch settings, warning indications, and the title characters to be superimposed.

**Zebra pattern:** Appears on the portion of the screen where the video output level is about 70 to 80 IRE (for NTSC) or 490 to 560 mV (for PAL). This pattern acts as a reference when you manually adjust the iris.

**Safety zone marker and center marker:** Indicate the safety zone for shooting and the center of the picture.

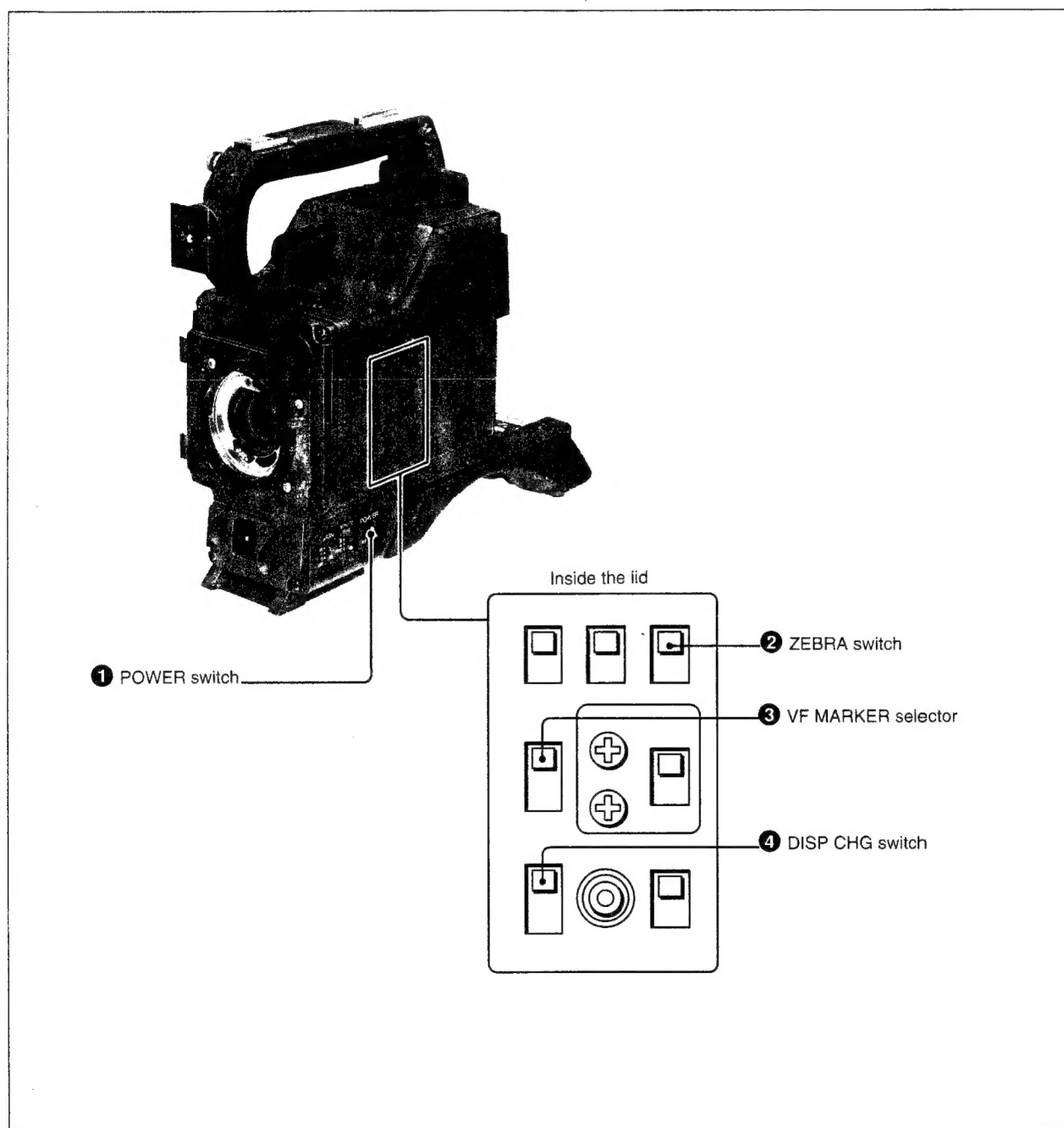
**Status indicators:** The REC/TALLY indicator flashes to warn the connected VTR malfunctions, the BATT indicator the weak power of the installed battery pack, and the SHUTTER and GAIN UP indicators show the setting status of the corresponding switches.

# Location and Function of Parts

## DXC-327A/327AP Camera Head

The DXC-327A/327AP Camera Head is the modular core of this multipurpose camera system. Depending on your purpose, connect VTRs and camera control units to it via the CA-537/537P or CA-327/327P Camera Adaptor.

### Camera head power supply and indications



## ① POWER switch

<b>OFF</b>	Turns the camera off.
<b>ON SAVE</b>	Select to save power. When you press the VTR start button, there is a delay before recording starts, but the amount of power consumed in this mode is less than when the VTR is in stand-by mode (STBY). This function is activated only when the VTR has the power saving function.
<b>ON STBY</b>	Select for a quick start. When you press the VTR start button, recording starts immediately. In this mode power continues to be consumed while the drum heads rotate.

## ② ZEBRA switch

**ON:** Select to display the zebra pattern on the viewfinder screen for manual iris adjustment. The zebra pattern appears in the picture where the video level is about 70 to 80 IRE (for NTSC) or about 490 to 560 mV (for PAL). (See page 1-69.)

**OFF:** Select not to display the zebra pattern.

## ③ VF MARKER (viewfinder safety zone marker and/or center marker) selector

Use this selector to display the safety zone marker and/or center marker on the viewfinder screen.

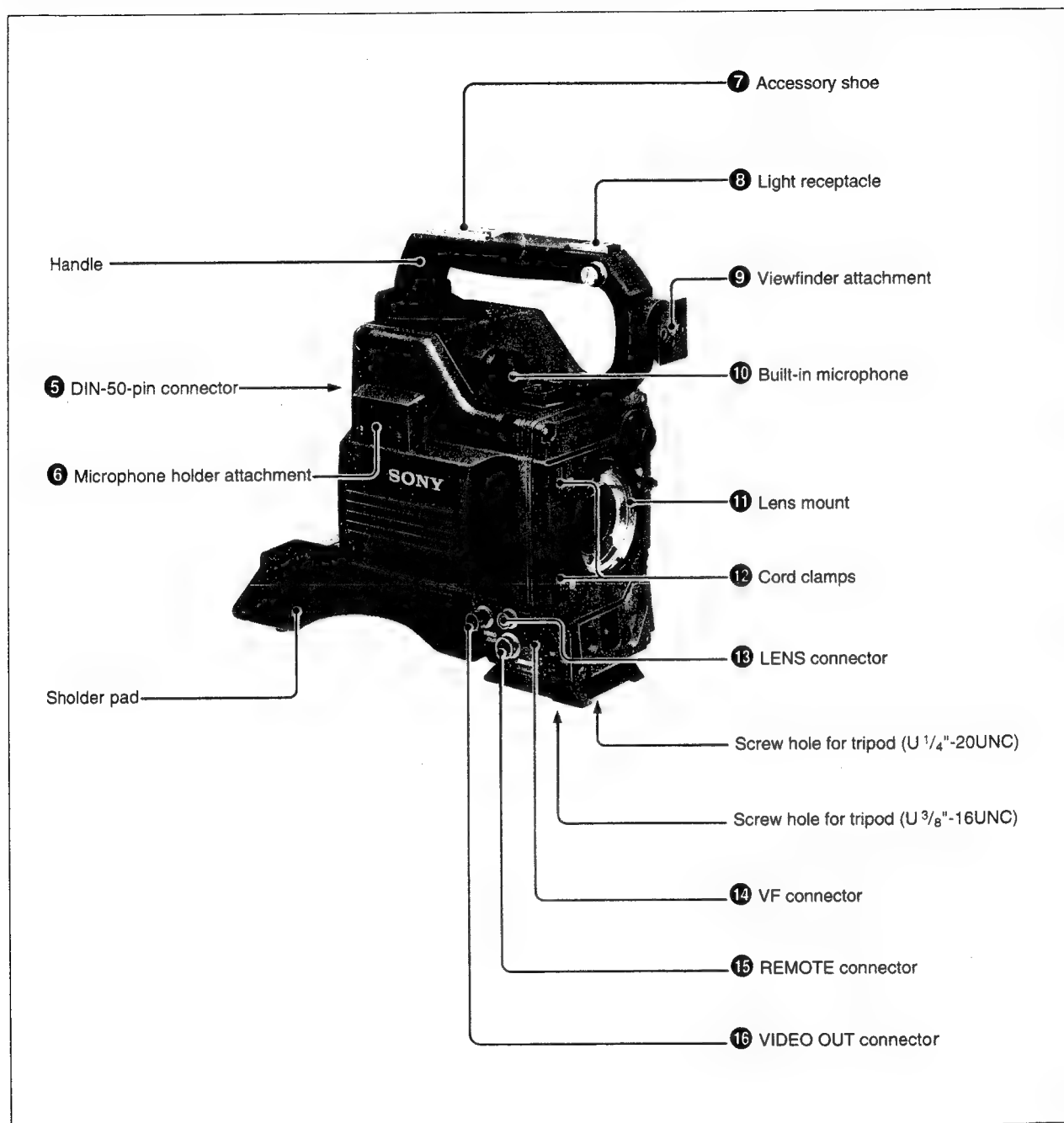
<b>OFF</b>	Indicates neither of the markers.
<b>1</b>	Indicates the safety zone marker.
<b>2</b>	Indicates both of the markers.

## ④ DISP CHG (display change) switch

Push this switch to change the character display mode of the viewfinder screen. (See page 1-51.)

## Location and Function of Parts

### Camera head attachments and input/output connectors





## 5 DIN 50-pin connector

Connect to the 50-pin connector of the camera adaptor or EVV-9000/9000P, PVV-1/1P. (See pages 1-20 to 1-22.)

## 6 Microphone holder attachment

Attach an optional CAC-12 microphone holder here. (See page 1-27.)

## 7 Accessory shoe

Attach an optional accessory such as an DXF-40A/40ACE, DXF-50/50CE viewfinder here.

## 8 Light receptacle

Attach an optional video light or other accessories here.

## 9 Viewfinder attachment

Attach the DXF-501/501CE viewfinder here.

## 10 Built-in microphone

The built-in microphone allows you to make a sound recording along with the video recording. When an external microphone is connected to the MIC IN connector on the CA-537/537P Camera Adaptor, the built-in microphone does not function. We recommend you use a uni-directional external microphone to get a better sound recording when a VTR such as a PVV-1/1P, EVV-9000/9000P, is directly attached to this unit.

## 11 Lens mount

Attach the VCL-712BX zoom lens or another  $\frac{1}{2}$ " lens and related equipment here.

## 12 Cord clamps

Secure the viewfinder cord.

## 13 LENS connector (6-pin)

Connect the lens cord when a  $\frac{2}{3}$ -inch lens is attached to the camera head using an LO-32BMT Lens Mount Adaptor or when an MVA-40 Microscope Adaptor is attached to the camera.

## 14 VF connector (8-pin)

Connect the viewfinder cord here.

## 15 REMOTE connector (10-pin)

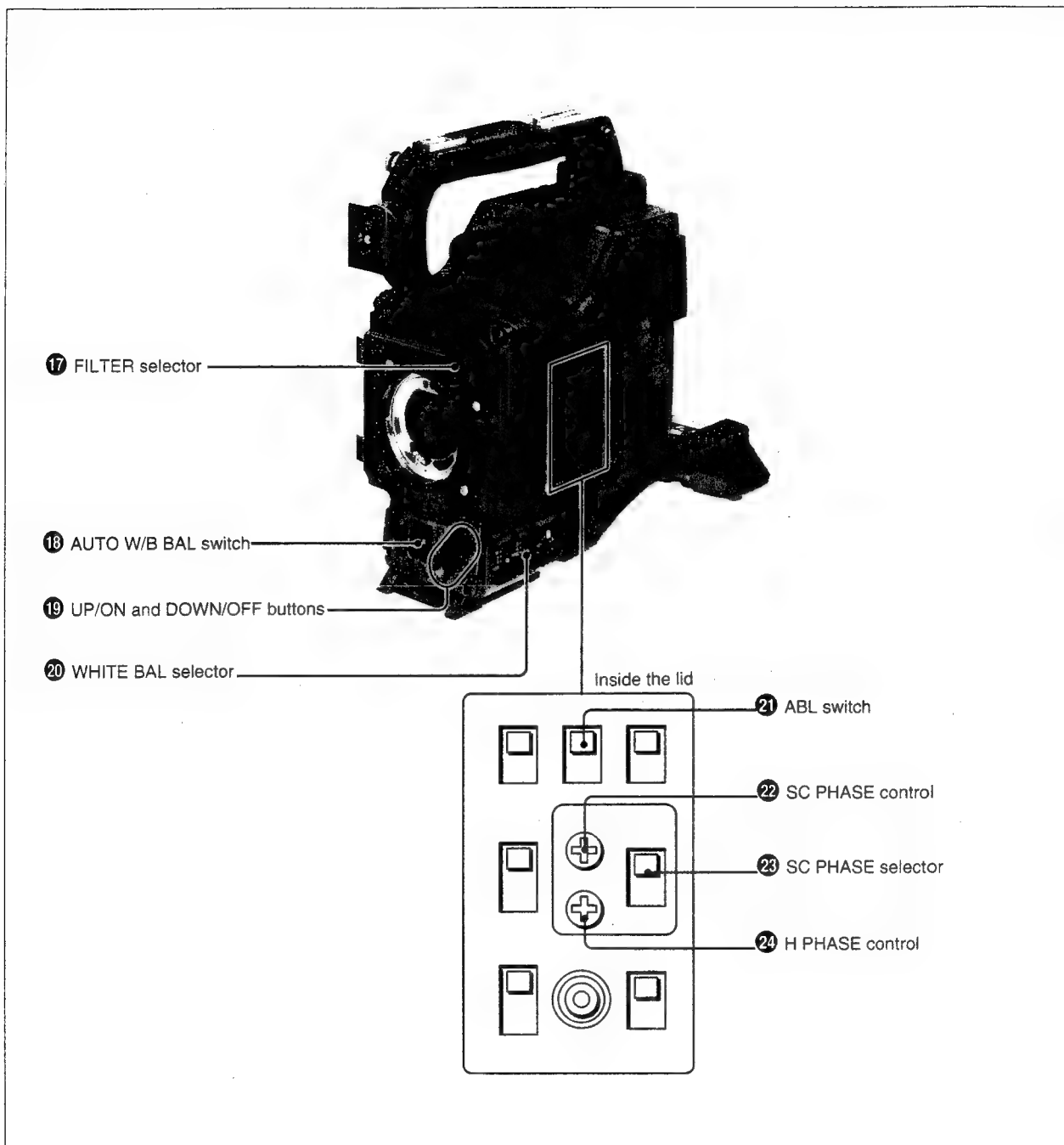
To operate this camera from an RM-M7G Camera Remote Control Unit, connect the camera to the remote control unit via this connector. Make sure the CAMERA SELECT switch on the bottom of the RM-M7G is set to "1", the factory preset position.

## 16 VIDEO OUT (output) connector (BNC type)

To check the picture of the camera you are shooting, connect to the input connector of a video monitor. Also you can connect to the video input of a VTR. Title characters display on the viewfinder screen output from this connector.

# Location and Function of Parts

## Camera head switches and controls



## 17 FILTER selector

Selects the appropriate filter according to lighting conditions.

Filter number	Color temperature	Lighting conditions
1	3200K	Iodine lamp, sunrise or sunset
2	5600K + $\frac{1}{16}$ ND <sup>1)</sup>	Bright outdoor
3	5600K	Cloudy or rainy

<sup>1)</sup> ND: Neutral density filter

## 18 AUTO W/B BAL (automatic white/black balance adjustment ) switch

Select "A" or "B" with the WHITE BAL selector 20, and push this switch to WHT to automatically adjust white balance. To automatically adjust black balance, push this switch to BLK. You can do this irrespective of the WHITE BAL selector setting. The setting value is stored in the camera's memory. When you release this switch, the switch returns to the center position automatically.

## 19 UP/ON and DOWN/OFF buttons

Press either of these buttons with the DISP CHG switch 4 to make one of the following six settings to:

- Set the title characters (See page 1-72.)
- Turn on/off the LOW LIGHT indication (see page 1-49.)
- Adjust the reference level of the automatic iris (See page 1-55.)
- Adjust the detail level (See page 1-68.)
- Adjust the master pedestal level (See page 1-62.)
- Adjust the shutter speed (See page 1-63.)

## 20 WHITE BAL (white balance memory) selector

**A or B:** Select A or B to make the camera use the white balance setting stored in memory position A or B.

**PRE:** Set to PRE when there is no time to adjust the white balance. This function provides a factory-preset white balance value for a color temperature of 3200K for the selected FILTER selector position.

## 21 ABL (automatic black level) switch

When the entire picture is too bright, such as during outdoor shooting, set this switch to ON. A well-contrasted picture will be obtained.

## 22 SC (subcarrier) PHASE control

Turn this control to fine tune the SC phase using a small screwdriver. Do this after roughly adjusting the SC phase using the SC PHASE selector (see page 1-71.) Do this adjustment when you are using two or more cameras simultaneously.

## 23 SC (subcarrier) PHASE selector

Switch this selector to 0° or 180° to roughly adjust the SC phase difference between the gen-lock input and the video output signals when using two or more cameras simultaneously. (See page 1-71.)

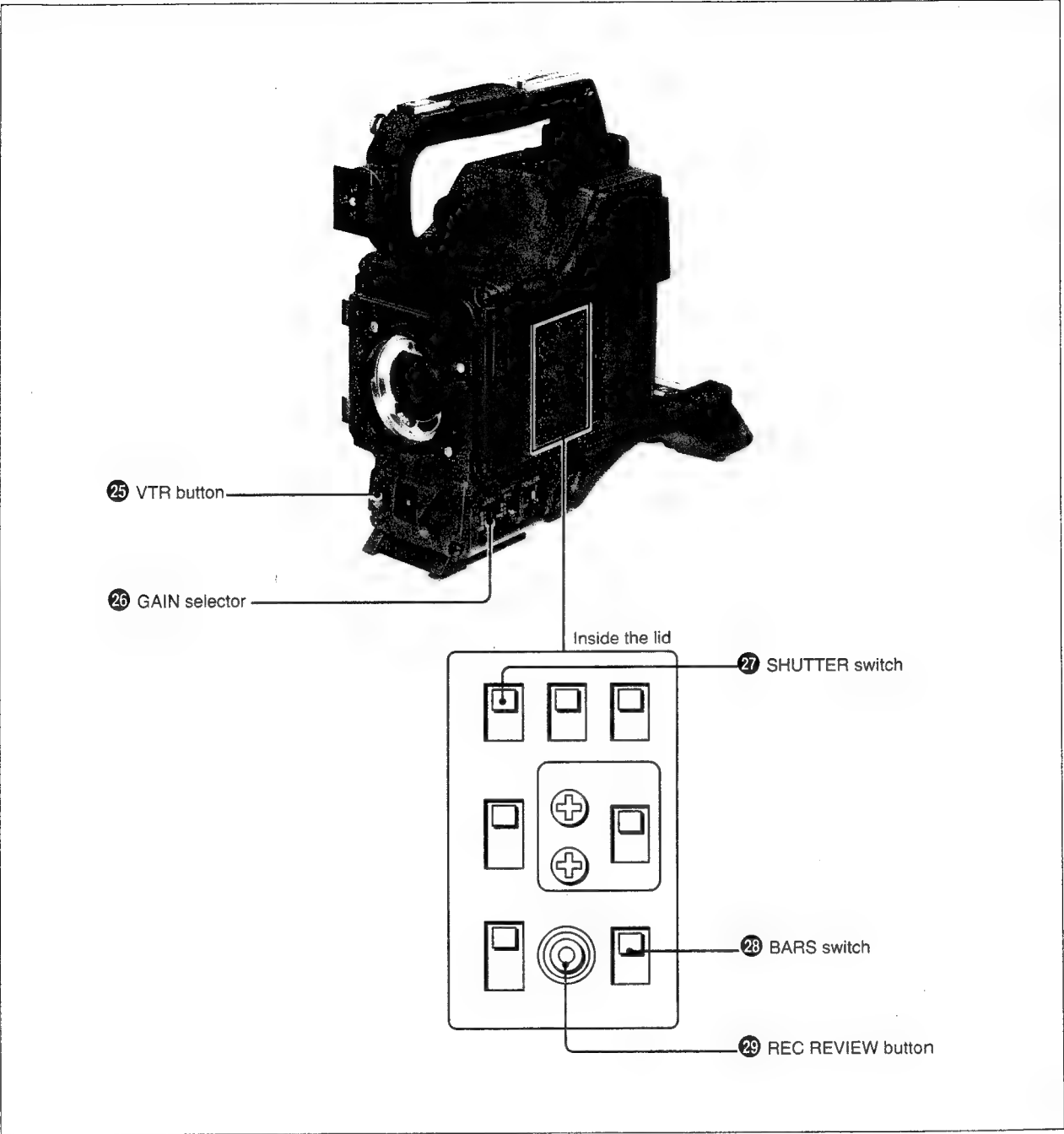
## 24 H (horizontal) PHASE control

Turn this control to adjust the H phase difference between the gen-lock input and video output signals using a small screwdriver. (See page 1-71.)

DXC-327A (UC) / DXC-327AP (EK)

# Location and Function of Parts

## Camera head output selectors



**25 VTR button**

When connecting the camera to a portable VTR, press this button to start and stop recording. When connecting the camera to a CCU-M7/M7P or CCU-M3/M3P, keep this button depressed to monitor the return video pictures on the viewfinder. Release it to monitor the camera pictures.

**26 GAIN selector**

Select a higher setting to lighten dark pictures.

**27 SHUTTER switch**

Flip this switch to control the electronic shutter.

**ON:** Flip to this position to activate the electronic shutter. To select the shutter speed, use the UP/ON or DOWN/OFF button. (See page 1-63.)

**OFF:** Flip to this position to deactivate the electronic shutter.

**28 BARS (color bar generation) switch**

**ON:** Set to this position to display the color bars on the viewfinder or video monitor screen when adjusting its contrast and brightness. The color bars are output to the viewfinder, video monitor or other connected equipment from the following connectors.

- VIDEO OUT connector
- VF connector
- REMOTE connector
- VTR/CCU/CMA connector (on the camera adaptor)

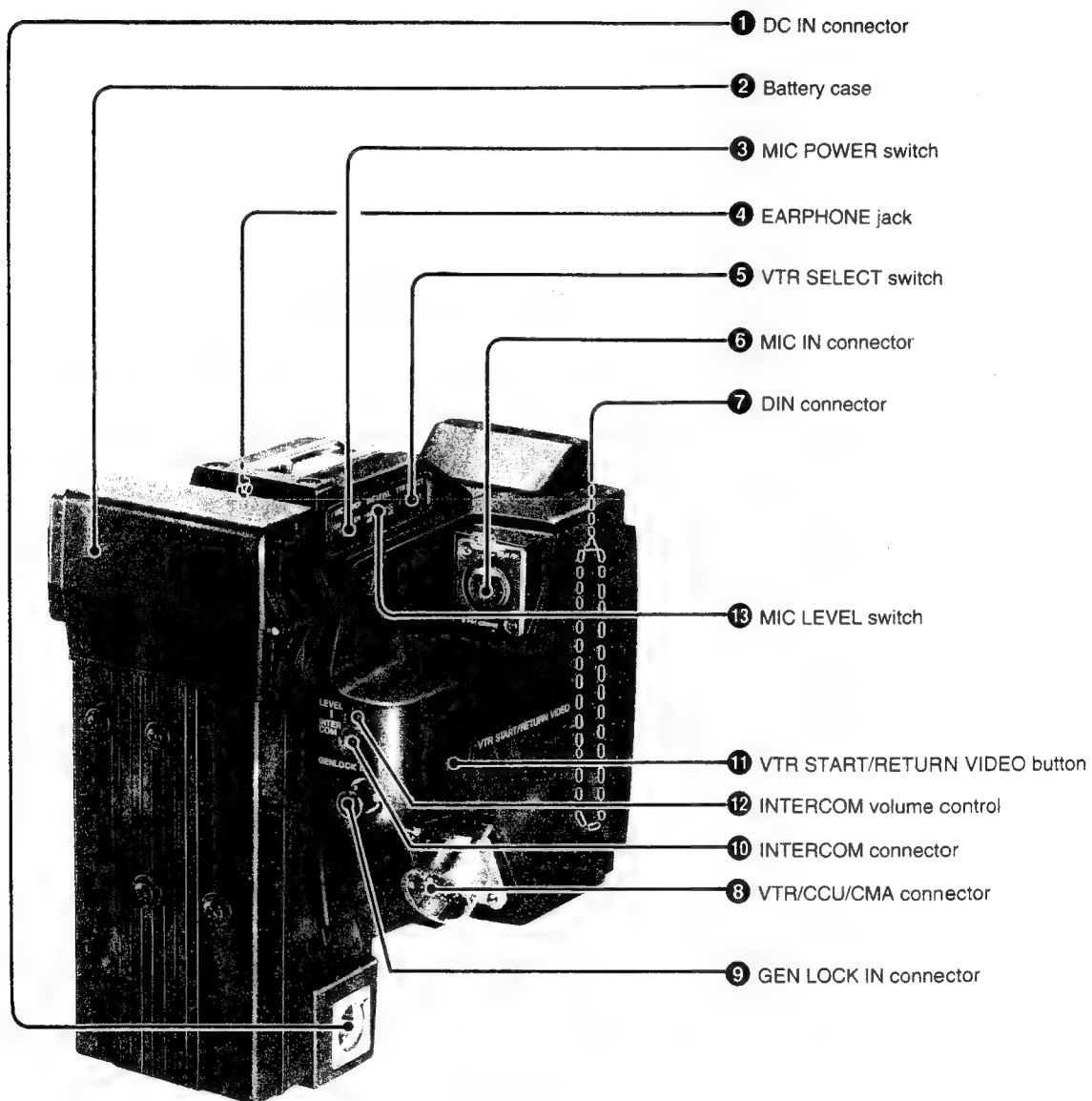
**OFF:** Set to this position for normal operation.

**29 REC (record) REVIEW button**

Press this button when using a VTR such as an EVV-9000/9000P, PVV-1/1P, with this camera to check the recorded picture while recording. (For details, refer to the operations manual for the cassette recorder.)

## Location and Function of Parts

### CA-537/537P Camera Adaptor (optional)



## Power supply

### ① DC IN (input) connector (XLR-4 pin)

Connect an external DC power source (12 volt DC) here to supply power to the camera adaptor and camera.

When the power is supplied from this connector, power supplied from a battery pack or from the VTR/CCU/CMA connector is not used.

### ② Battery case

Insert an NP-1B or NP-1A battery pack (not supplied) here.

### ③ MIC (microphone) POWER switch

**ON:** When you use the microphone of a phantom powering system, set the switch to this position. The power is supplied to the microphone from the MIC IN connector.

**OFF:** When you use a microphone other than a phantom powering system, set the switch to the OFF position.

## Input and output connectors

### ④ EARPHONE jack (minijack)

Connect an earphone here to monitor the playback or recording sound from the VTR.

#### Note

Some type of VTR may not let you monitor the sound output from the VTR. (See page 1-47).

### ⑤ VTR SELECT switch

Use this selector according to the type of VTR connected to the camera. (See page 1-37).

#### Caution

Be sure to set the VTR selector to the correct VTR type; otherwise, the VTR will not operate properly.

### ⑥ MIC IN (microphone input ) connector (XLR 3-pin )

Connect an external microphone here.

### ⑦ DIN connector (50-pin)

Connect to the 50-pin connector on the camera head.

### ⑧ VTR/CCU/CMA connector (26-pin)

Connect a VTR, CCU-M7/M7P or CCU-M3/M3P Camera Control Unit or CMA-8A/8ACE Camera Adaptor here.

### ⑨ GEN LOCK IN (gen-lock input) connector (BNC-type)

Connect the gen-lock sync signal (VBS or BS) for synchronization here.

### ⑩ INTERCOM connector

Connect a DR-100A intercom headset here. The DR-100A enables communication between the camera and the connected CCU-M7/M7P or CCU-M3/M3P Camera Control Unit or video switcher.

## Switches and controls

### ⑪ VTR START/RETURN VIDEO button

**When a portable VTR is connected to the VTR/CCU/CMA connector:** Press this button to start and stop recording.

**When the CCU-M7/M7P or CCU-M3/M3P Camera Control Unit is connected:** Keep this button depressed to monitor the return video picture, and release it to monitor the camera picture.

### ⑫ INTERCOM volume control

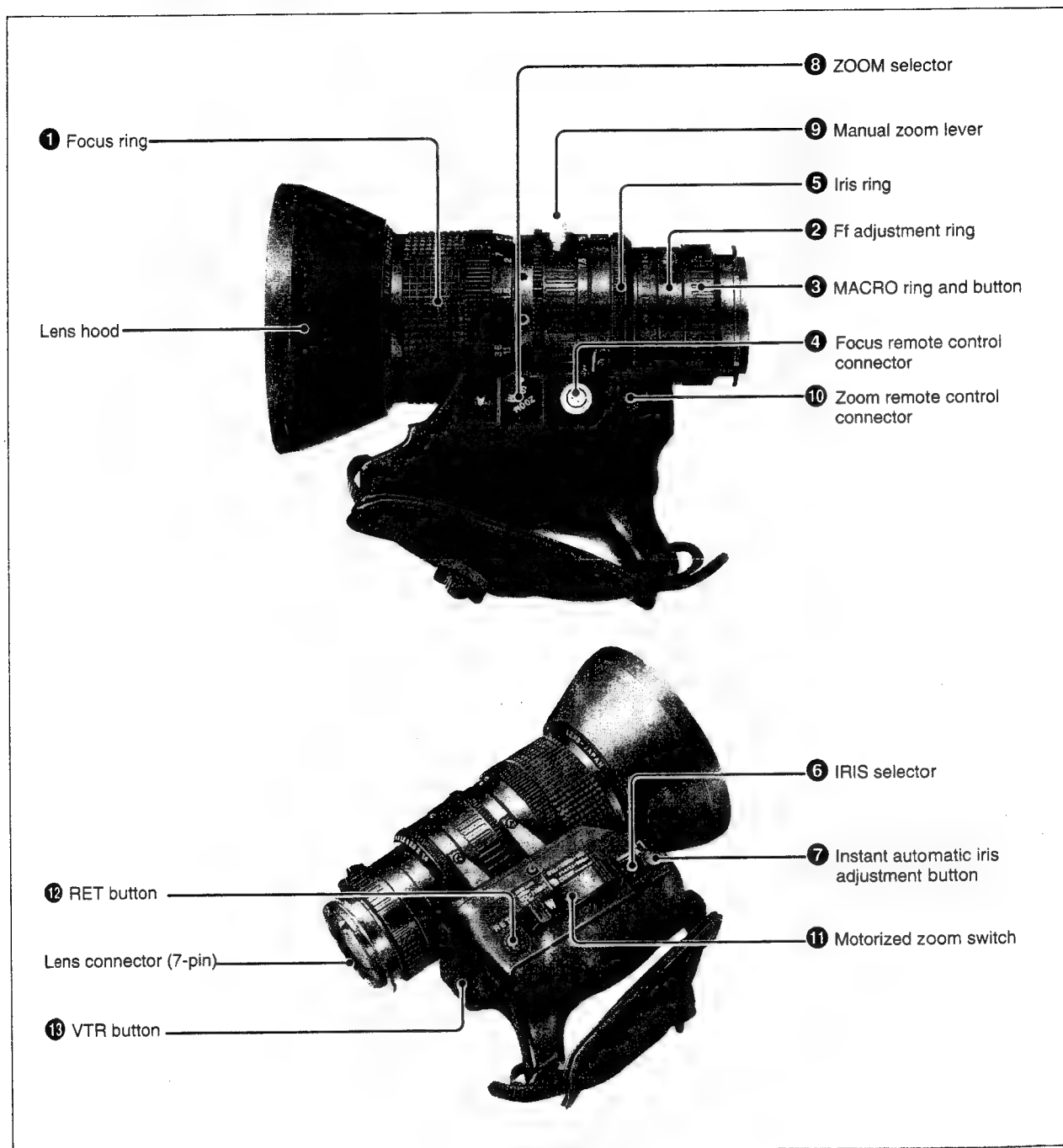
Controls the volume level through the DR-100A Intercom Headset.

### ⑬ MIC (microphone) LEVEL switch

Set this switch according to the sensitivity of the MIC IN on the VTR and CCU. If the sensitivity is high, set it to a minimum of -20 dB; if it is low, set it to a maximum of -60 dB. (Refer to the operations manual of the VTR.)

## Location and Function of Parts

### VCL-712BX Zoom Lens





## Focusing

### ① Focus ring

To focus, turn this ring.

### ② Ff (flange focal length) adjustment ring

To adjust the Ff, release the screw and turn the ring.

### ③ MACRO (close-up) ring and button

To do close-up, turn the MACRO ring while sliding the button.

### ④ Focus remote control connector (3-pin)

Not used.

## Iris adjustment

### ⑤ Iris ring

To manually adjust the iris, turn this ring with the iris selector ⑥ set to M.

### ⑥ IRIS selector

**A (automatic):** Select to adjust the iris automatically.

**M (manual):** Select to adjust the iris manually.

### ⑦ Instant automatic iris adjustment button

To automatically adjust the iris during manual iris adjustment, keep this button depressed. When the button is released, the iris will remain at the value that has just been obtained and will stay that way until you manually adjust the iris again.

## Zoom controls

### ⑧ ZOOM selector

**S (servo):** Select for motorized zoom action.

**M (manual):** Select for manual zoom.

### ⑨ Manual zoom lever

To do manual zoom, move this lever with the ZOOM selector ⑧ set to M.

### ⑩ Zoom remote control connector (8-pin)

To do remote control zoom when the camera is attached to a tripod, connect an LO-23 Lens Remote Control Unit (optional) here.

### ⑪ Motorized zoom switch

For motorized zoom action, set the zoom selector to S. Then, press either end of the motorized zoom switch, W for a wide angle shot, and T for a telephoto shot. Press the switch down all the way for faster zoom action and only slightly for slow zoom action.

## Recording controls

### ⑫ RET (return video) button

**When a portable VTR is connected,** keep this button depressed to monitor the E-E picture on the viewfinder screen. Release the button to monitor the camera picture.

**When a CCU-M7/M7P or M3/M3P Camera Control Unit is connected,** keep this button depressed to monitor the return video picture on the viewfinder screen. Release the button to monitor the camera picture.

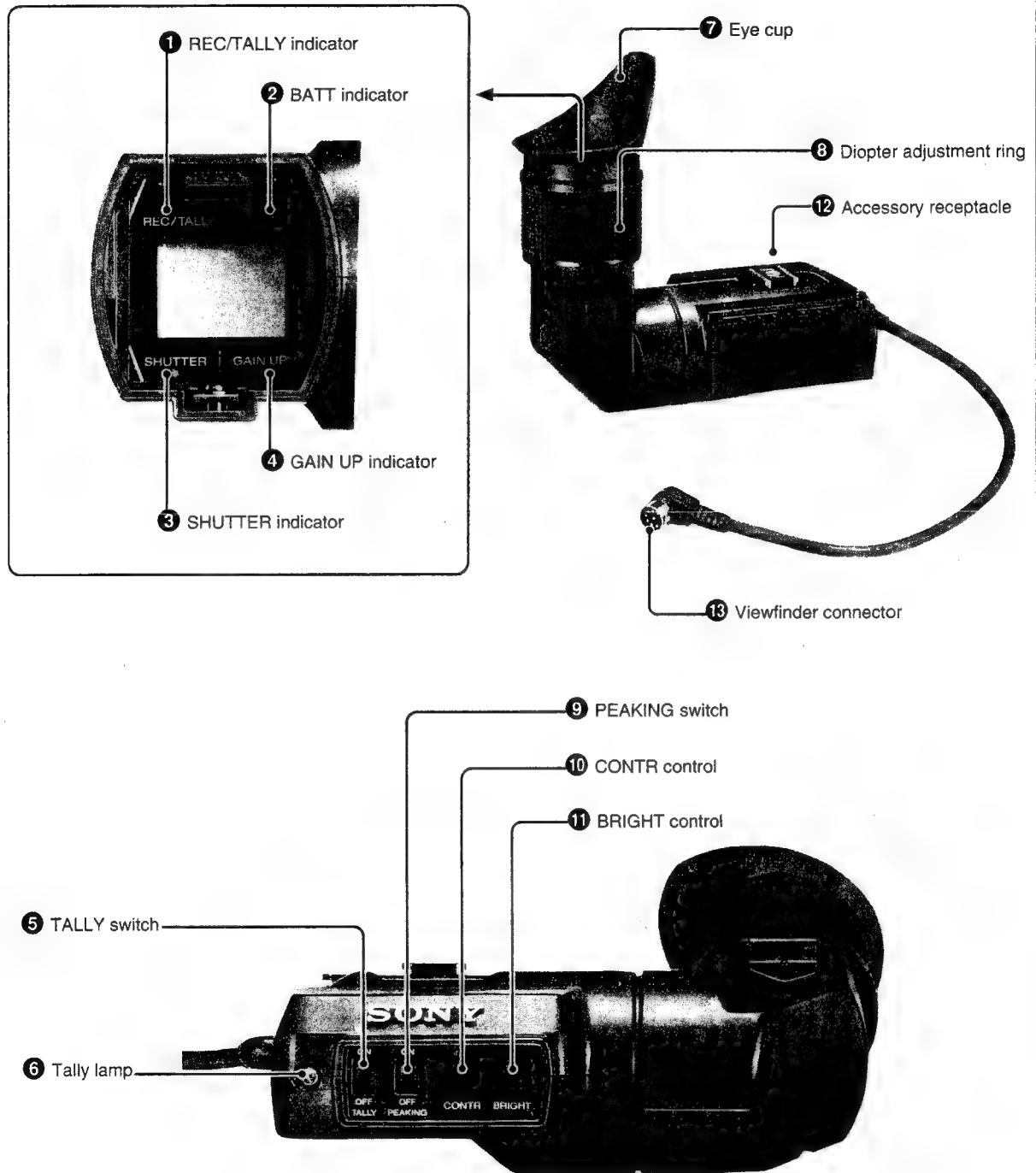
### ⑬ VTR button

**When a portable VTR is connected,** press this button to stop and start recording. This button has the same function as the VTR button on the camera head.

**When a CCU-M7/M7P or M3/M3P Camera Control Unit is connected,** keep this button depressed to monitor the return video picture on the viewfinder screen. Release the button to monitor the camera picture. Starting and stopping recording is controlled on the VTR.

## Location and Function of Parts

### DXF-501/501CE Electronic Viewfinder



## Viewfinder indicators

### ① REC/TALLY indicator (red)

This indicator has three functions as described below.

**When you are recording using one camera,**  
This indicator lights up during recording.

**When two or more cameras are being operated by a CCU-M7/M7P or M3/M3P,**

This indicator lights up when the camera's picture is selected by a control console or video switcher.

**When the connected VTR is equipped with a warning system,**

This indicator flashes in accordance with the warning system in the VTR.

### ② BATT (battery) indicator (red)

This indicator starts flashing when the voltage from the battery in the camera, VTR, or camera control unit begins to drop below a specified level. When the voltage level reaches about 11 volts (the unit cannot operate below this level) the indicator lights steadily. (For details, see the "Battery life warning" on page 1-41.)

#### Note

With some types of VTR, the indicator may not light or flash.

### ③ SHUTTER indicator (red)

This indicator lights up when the SHUTTER switch on the camera head is set to ON.

### ④ GAIN UP indicator (orange)

This indicator lights up when the GAIN selector is set to 9 dB or 18 dB.

### ⑤ TALLY switch

**ON:** To activate the tally lamp.

**OFF:** To deactivate the tally lamp.

### ⑥ Tally lamp (red)

This lamp lights up when the TALLY switch ⑤ is set to ON. This lamp operates the same as the REC/TALLY indicator ①.

## Viewfinder display and controls

### ⑦ Eye cup

To see the viewfinder screen, look through this eye cup.

### ⑧ Diopter adjustment ring

This ring adjust the diopter. (See page 1-52.)

### ⑨ PEAKING switch

To increase the sharpness of the picture in the viewfinder for easy focusing, set this switch to ON.

### ⑩ CONTR (contrast) control

To adjust the contrast the picture in the viewfinder, turn this dial.

### ⑪ BRIGHT (brightness) control

To get a brighter picture, turn this dial clockwise.

## Viewfinder attachment and connector

### ⑫ Accessory receptacle

This allows you to attach various accessories. (U 1/4"-20UNC, screw length: max. 6 mm.)

### ⑬ Viewfinder connector

This connects to the VF connector on the camera head.

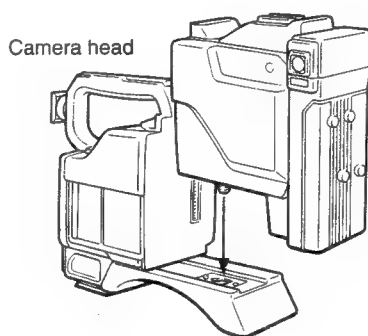
# Accessory Attachment

## Attaching/Detaching a Camera Adaptor

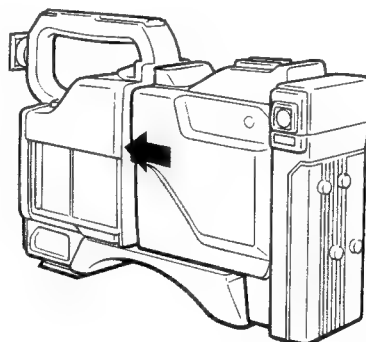
To use the DXC-327A/327AP camera head as a stand-alone camera, set up the camera head with a camera control unit or portable VTR using as interface the optional Sony CA-537/537P or CA-327/327P Camera Adaptor. Refer to the CA-327/327P operations manual for instructions on how to attach and detach that unit. Refer to the below procedure to attach the CA-537/537P Camera Adaptor.

### Attaching the CA-537/537P camera adaptor

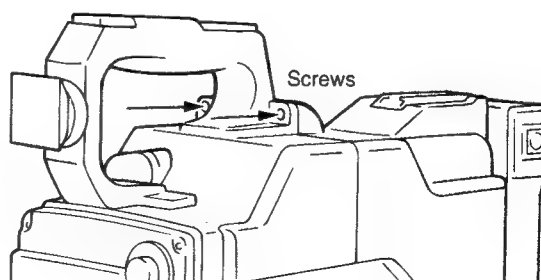
- 1** Place the camera adaptor on the camera head aligning the guide with the guide hole.



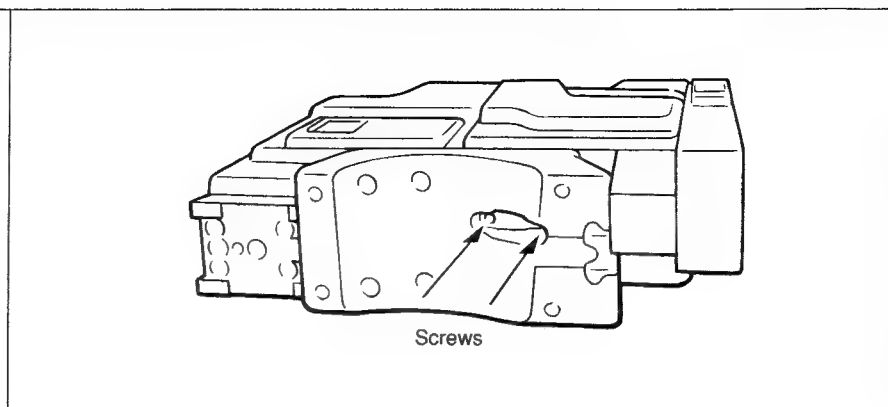
- 2** Push the camera adaptor forward along the grooves until its 50-pin connector locks into the DIN 50-pin connector on the camera.



- 3** Fix the camera adaptor to the camera head using the two screws.



- 4** Tighten the two screws at the bottom of the shoulder pad.



### Detaching the camera adaptor

To detach the camera adaptor, reverse the order of the above procedure.

**Note on connection with the CA-327/327P camera adaptor**

You can connect the following CA-327/327P series camera adaptors to the DXC-327A/327AP:

CA-327: Serial No. 10271 and higher for the DXC-327A.

CA-327P: Serial No. 40101 and higher for the DXC-327AP.

## Accessory Attachment

### Attaching a Videocassette Recorder

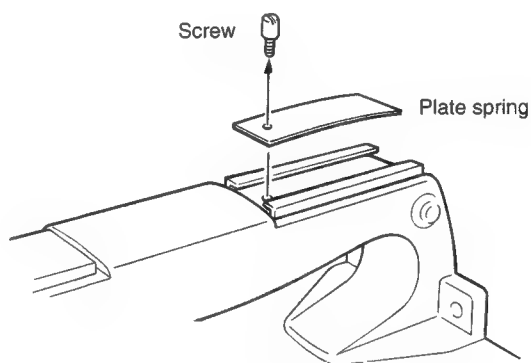
To attach an EVV-9000/9000P Hi8 Format Videocassette Recorder to the camera head, follow the procedures for attaching and detaching the CA-537/537P Camera Adaptor.

To attach a Betacam format video cassette recorder such as a PVV-1/1P, follow the procedure below.

Refer to the EVV-9000/9000P and PVV-1/1P operations manual for details.

- 1** Remove the screw of the accessory shoe on the camera head using a flat-head screwdriver, and remove the plate spring.

- 2** Attach the PVV-1/1P following the procedures for attaching the CA-537/537P.



## Attaching the Zoom Lens and Optional Filter

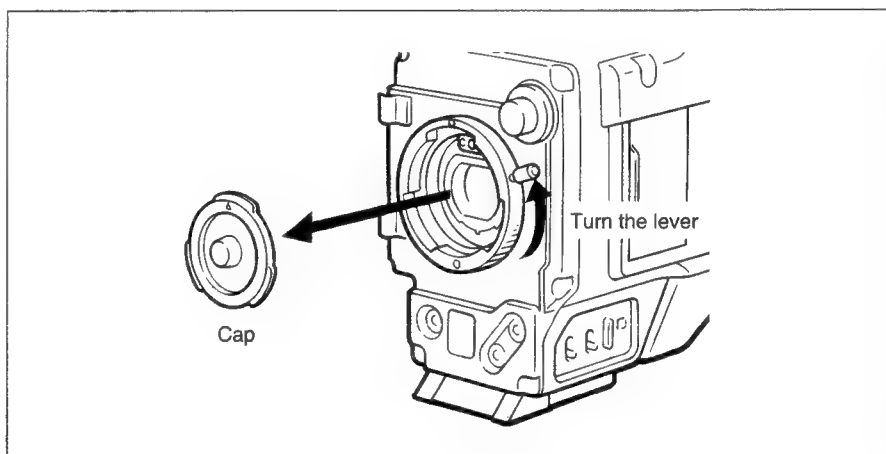
Check that the zoom lens you are going to mount is a  $\frac{1}{2}$ -inch lens.

### Caution

A  $\frac{2}{3}$ -inch lens cannot be directly attached to the lens mount of the video camera. Do not try to mount a  $\frac{2}{3}$ -inch lens directly to the video camera's lens mount as doing so will damage the optical block of the camera. To mount a  $\frac{2}{3}$ -inch lens, use an LO-32BMT Lens Mount Adaptor (optional).

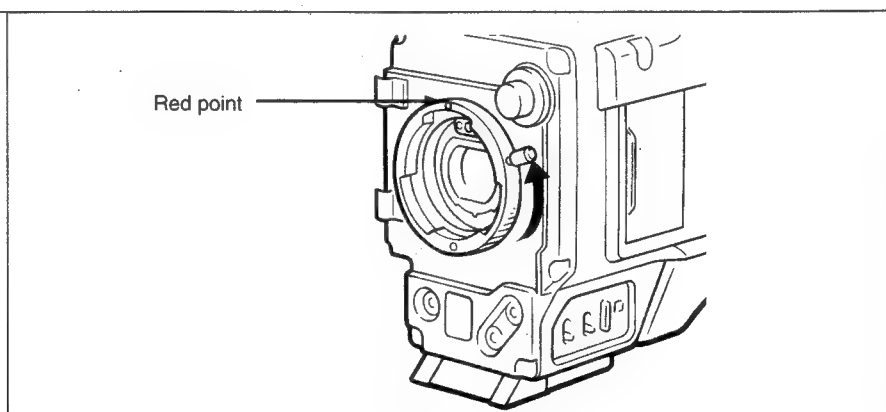
### Preparations

Remove the protective caps from the mounts of the camera and the lens.



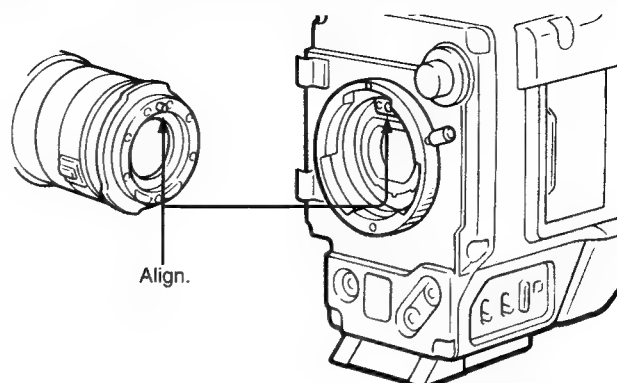
### Attaching the zoom lens

- 1 Turn the mount clamp lever fully counter clockwise to align the lens notch and the red point.

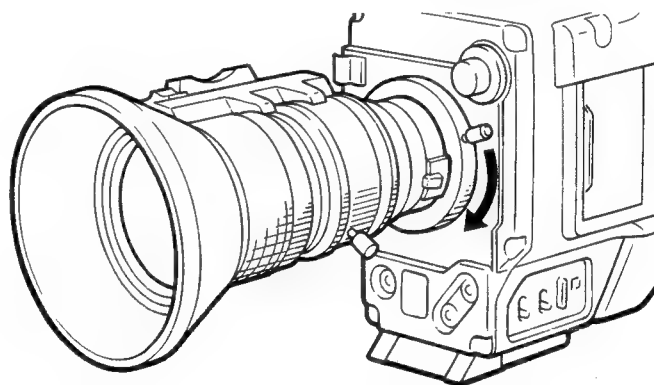


## Accessory Attachment

- 2** Align the center pin in the lens with the notch in the lens mount, and insert the lens into the mount.

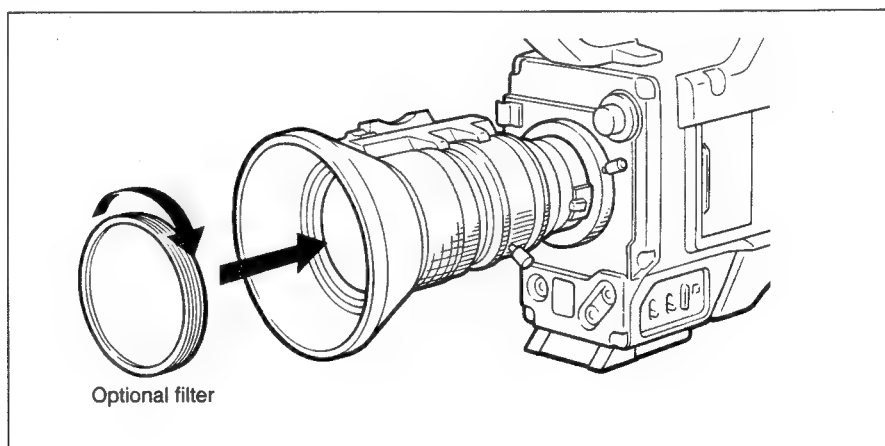


- 3** Holding the lens, push down on the lens fixing lever to tighten the ring and secure the lens.



### Attaching an optional filter

Screw the filter on clockwise to attach.

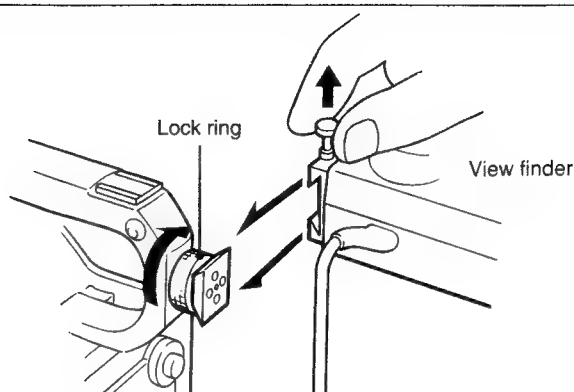




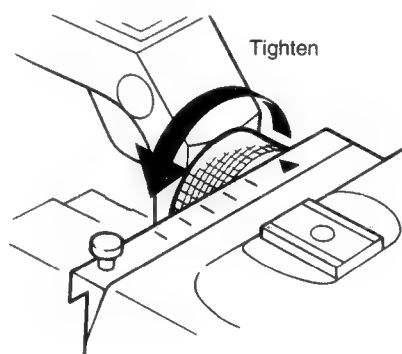
## Attaching and Adjusting the Electronic Viewfinder

- 1** Loosen the lock ring. While pulling up on the pin, align and guide the viewfinder along the mount.

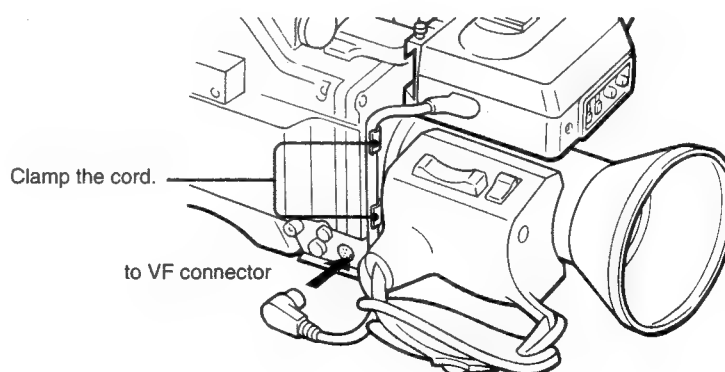
**To detach the viewfinder,** loosen the lock ring. Then while pulling up the pin, slide the viewfinder off the mount.



- 2** Turn and tighten the lock ring to fix the viewfinder.



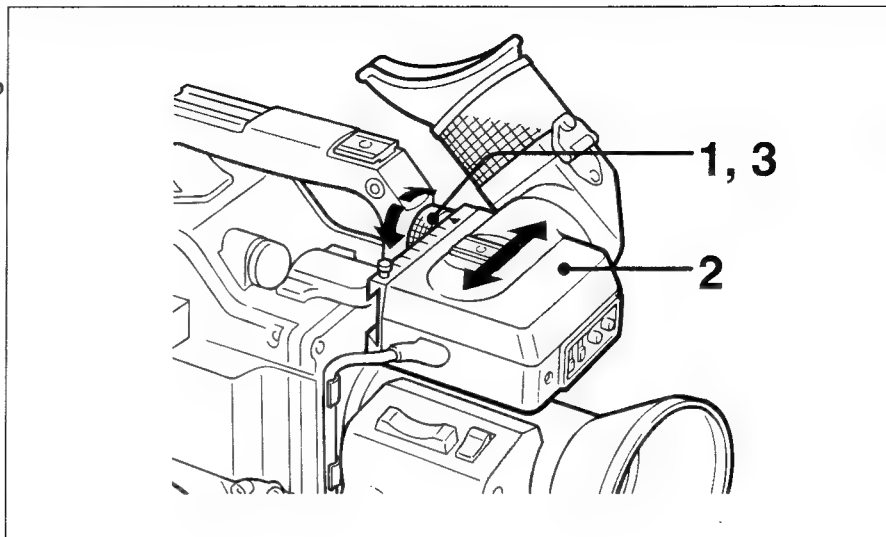
- 3** Connect the viewfinder connector cable to the VF connector on the camera head.



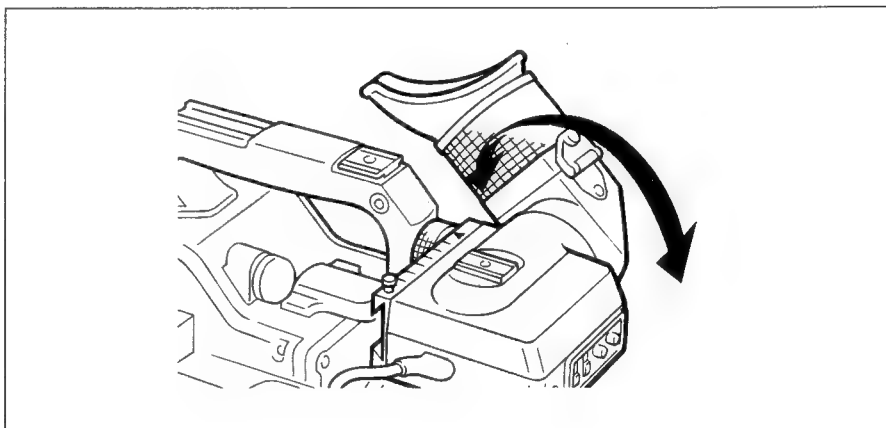
## Accessory Attachment

### Adjusting to the left or right

Loosen the lock ring.  
Looking through the eyepiece, slide the viewfinder sideways to the most convenient position.  
Tighten the lock ring when the viewfinder is in a comfortable position.

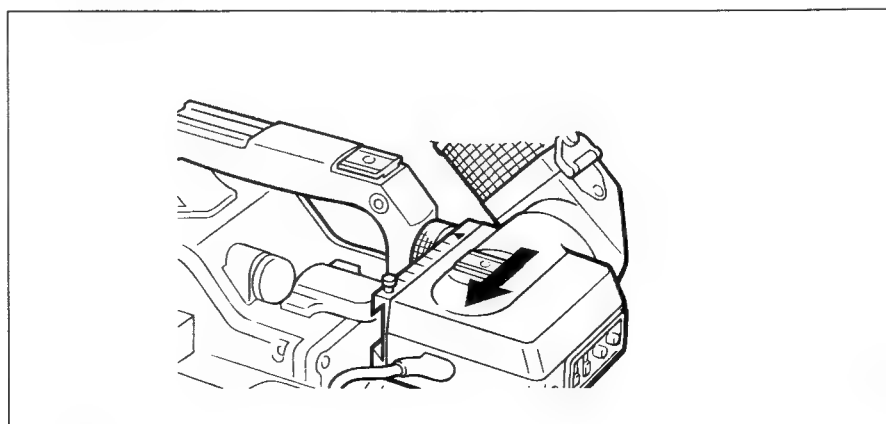


### Adjusting the angle



### Storing the unit in the carrying case

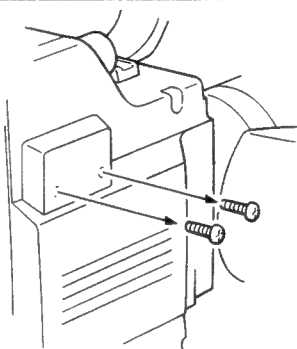
Always store the unit with the viewfinder positioned as close to the camera body as possible, and the lock ring fastened.



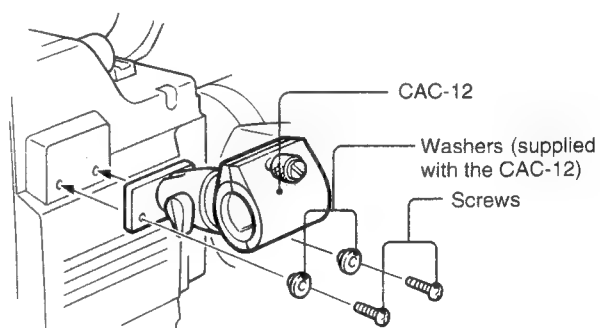
## Attaching a Microphone

In order to attach an ECM-672 External Microphone (optional), first fit a CAC-12 Microphone Holder (optional) to the camera head.

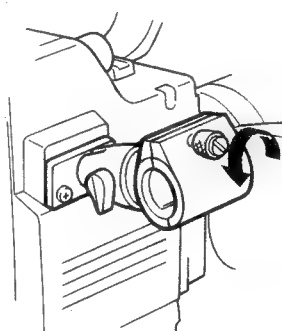
- 1** Remove the two screws from the side of the camera head.



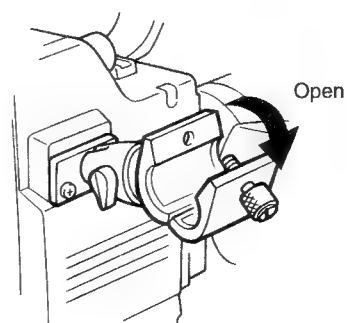
- 2** Using the screw removed in Step 1, attach the CAC-12 Microphone Holder.



- 3** Loosen the microphone holder bolt.

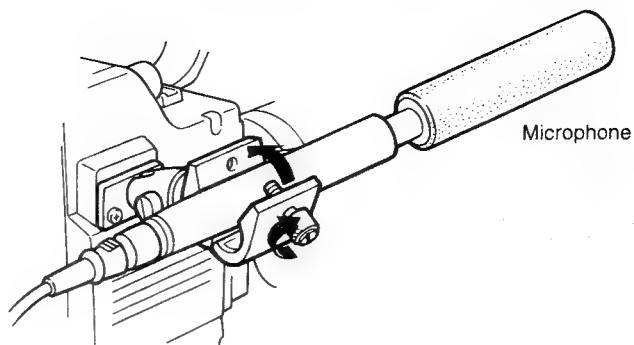


- 4** Open the microphone holder.

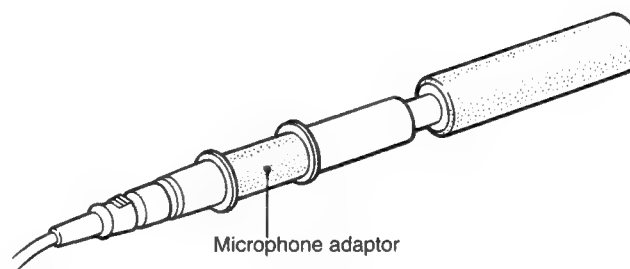


## Accessory Attachment

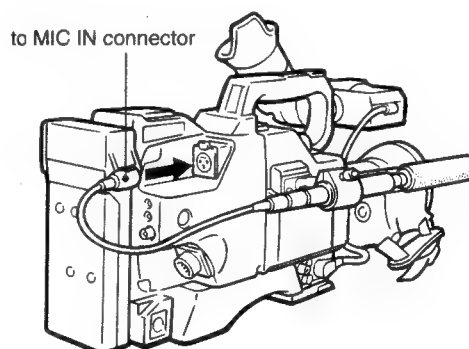
- 5** Insert the microphone in the microphone holder, close the holder and tighten the microphone holder bolt.



**When using a bayonet (thin) type microphone, attach a microphone adaptor to the microphone.**



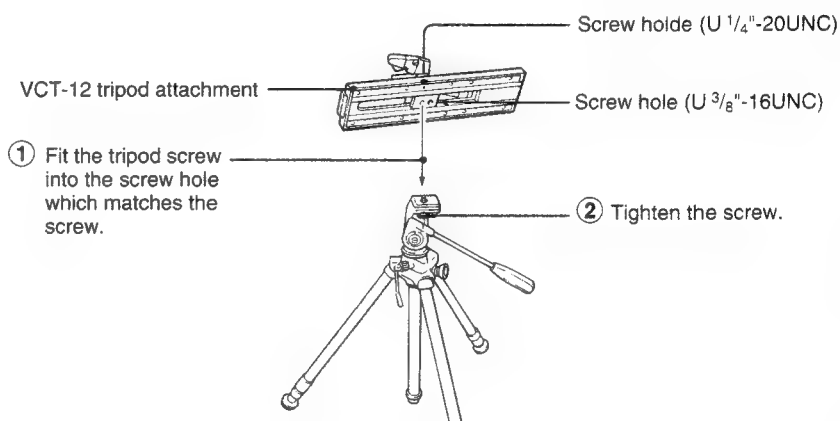
- 6** Connect the microphone cable to the MIC IN connector.



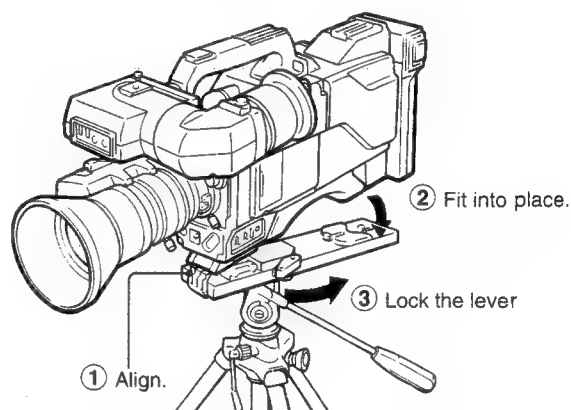
## Attaching/Detaching a Tripod

The fully loaded camera may be mounted directly onto a tripod. However, for a more secure operation, fit the camera to a VCT-12 tripod attachment before attaching it to a tripod stand.

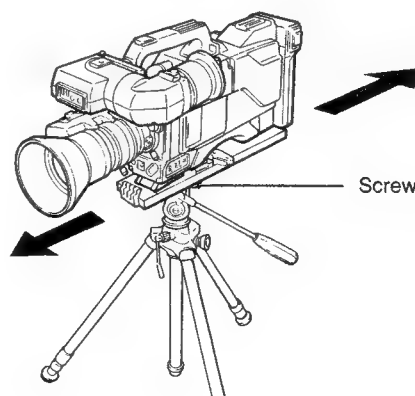
- 1** Attach the tripod attachment to the tripod.



- 2** Mount the unit on the tripod attachment.



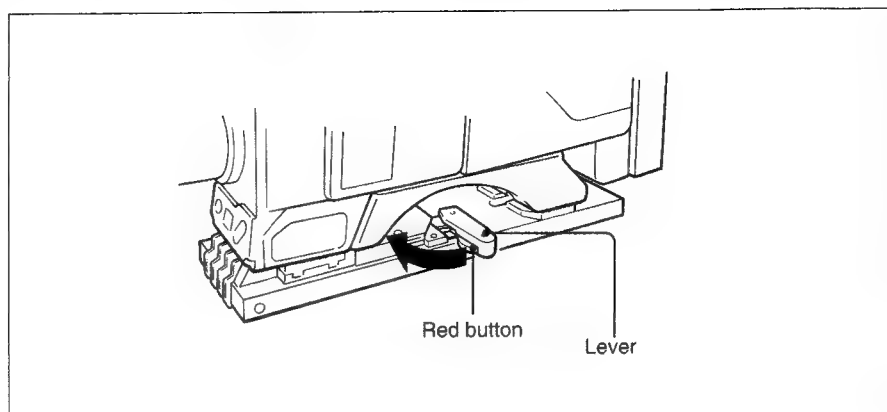
- 3** Slightly loosen the tripod screw, and move the camera to be balanced. Tighten the screw.



## Accessory Attachment

### Detaching the camera from the tripod

While pressing the red button, push the lever in the direction indicated by the arrow and detach the camera from the tripod attachment.



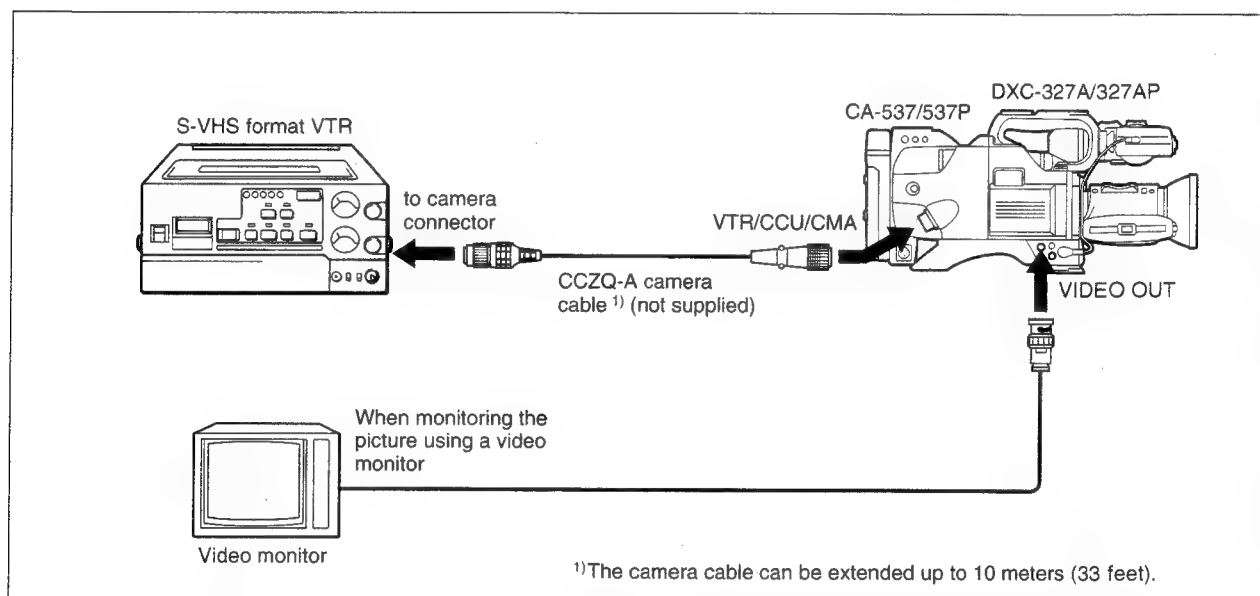
# Connections

Make sure the power switches on the camera, VTR, and other equipment are set to OFF.

Attach the CA-537/537P Camera Adaptor to the camera head before attaching any of the below equipment.

Consult the "Differences in functions" on page 1 - 38 for details on the functions available with different VTRs. For the general use of the camera with a VTR attached, see "Basic Operations" on page 1 - 44.

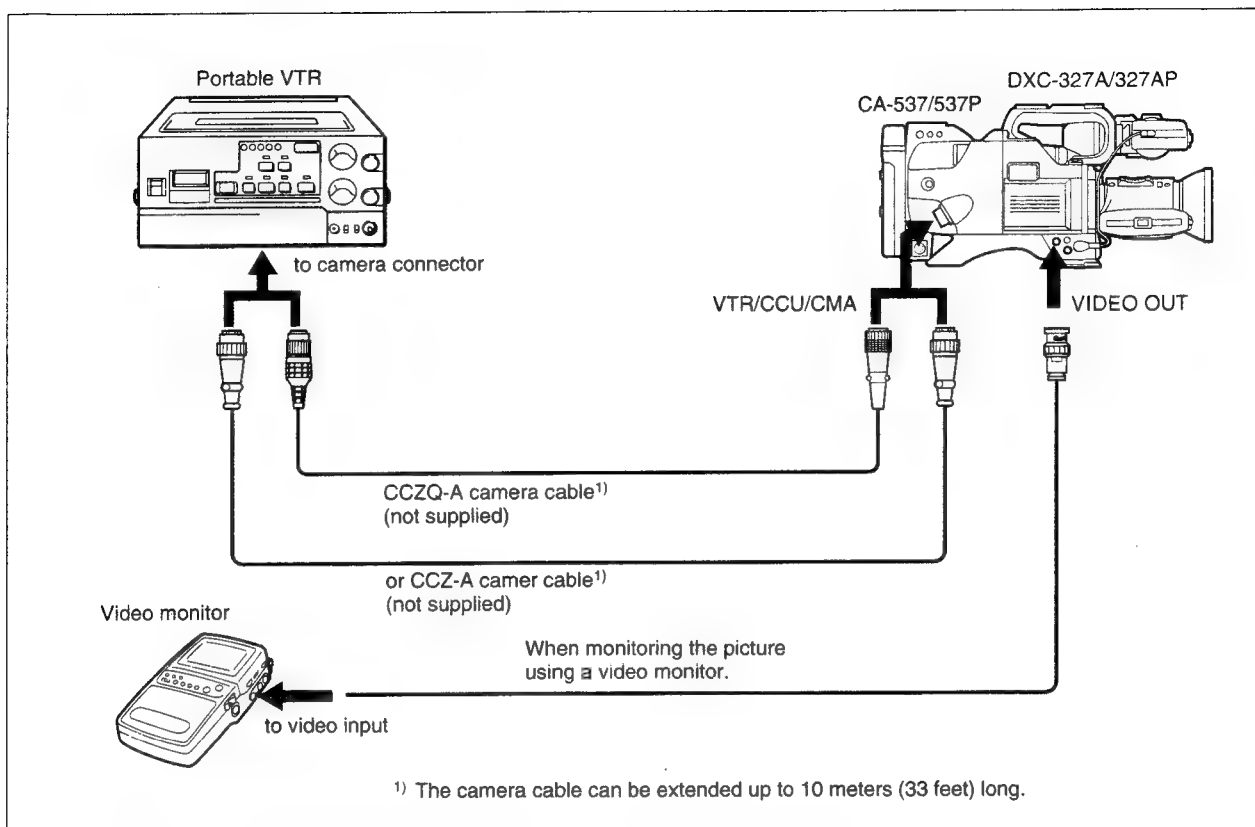
## Connecting an S-VHS Format Portable VTR



- When a video monitor equipped with an S-video input connector, connect the S-video connectors on the VTR and video monitor. Then a picture with high resolution with a Y/C separate signal can be monitored.
- When an S-VHS format VTR is connected via a CA-537/537P Camera Adaptor, set the VTR SELECT switch on the CA-537/537P to "3". Then a Y/C separate signal is output from the VTR/CCU/CMA connector on the CA-537/537P.
- A composite video signal is output from the VIDEO OUT connector.

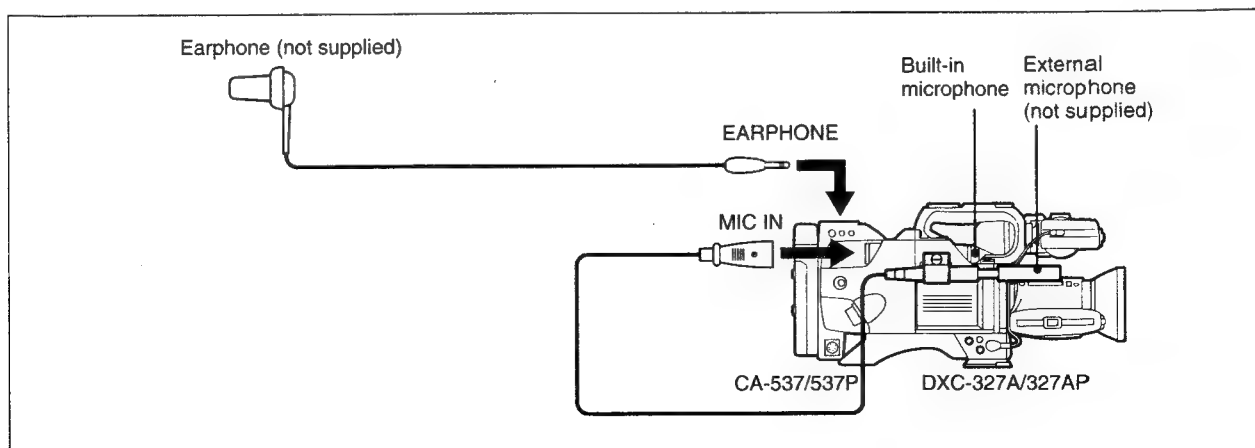
## Connections

### Connecting a Portable VTR



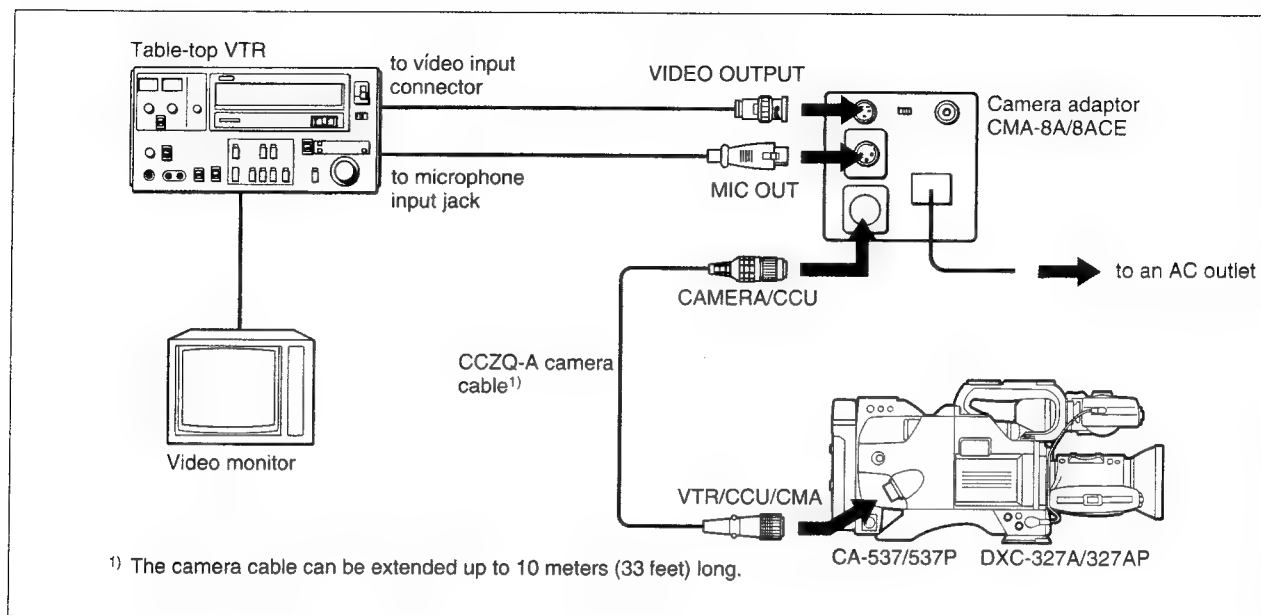
### Connecting an External Microphone

To avoid recording noise made while handling the camera, connect an external microphone to the MIC IN connector on the camera adaptor (see figure below). With the below connections, note that the built-in microphone automatically shuts off.





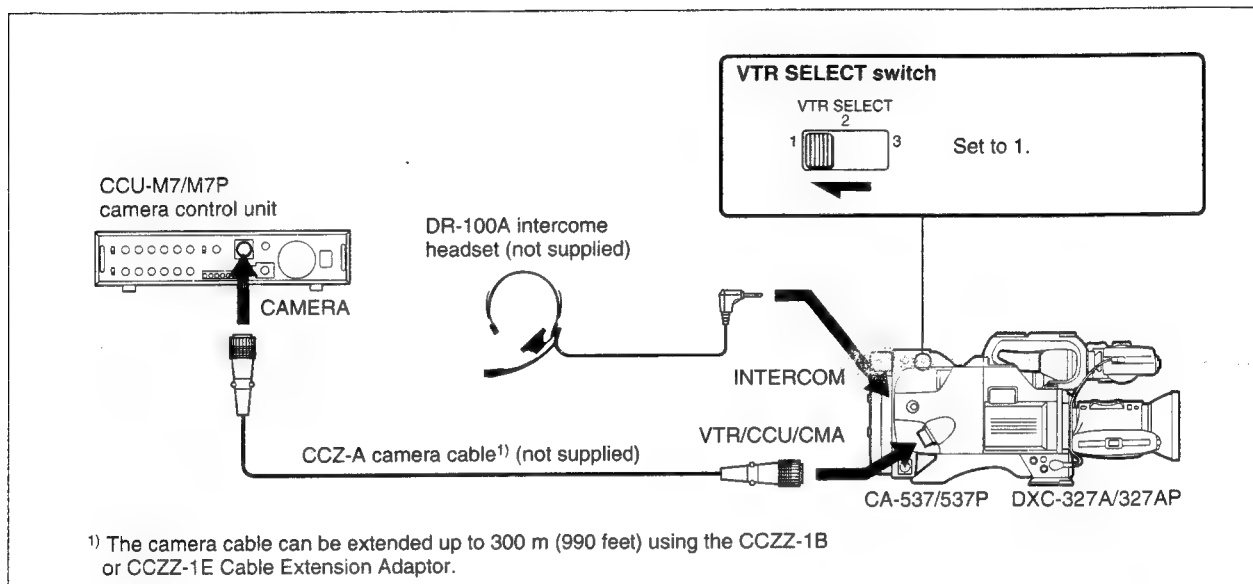
## Connecting a Table-Top VTR



## Connections

### Connecting a Camera Control Unit

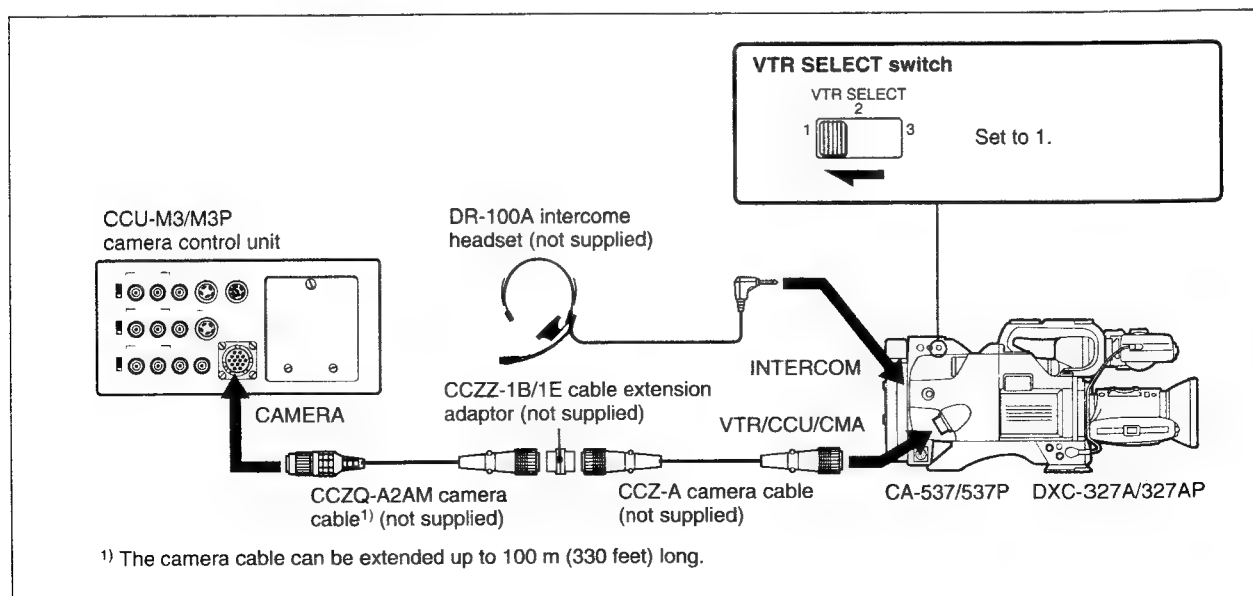
#### Connecting the CCU-M7/M7P camera control unit



#### Gamma and knee controls with the CCU-M7/M7P connected

When the camera is connected to the CCU-M7/M7P, the GAMMA controls and KNEE controls of the CCU-M7/M7P do not affect the video output signal of the camera. However, the setting value of the GAMMA and KNEE level on the monitor screen change.

#### Connecting the CCU-M3/M3P camera control unit



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**Notes on use with the CCU-M7/M7P or CCU-M3/M3P camera control unit****Switch setting**

- Set the VTR SELECT switch on the camera adaptor to "1."
- When the camera is connected to the CCU, the following switches on the camera head do not operate:
  - GAIN selector
  - WHITE BAL selector
  - H PHASE control
  - SC PHASE control
  - SC PHASE selector
  - SHUTTER switch
  - BARS switch
  - ABL switch

**Recording audio**

- When the CCU-M3/M3P is connected, the MIC IN connector on the camera adaptor cannot be used as an external microphone input. This is because the CCU-M3/M3P does not have a function to output an audio signal. For recording audio, connect a microphone to a VTR or a sound mixer.

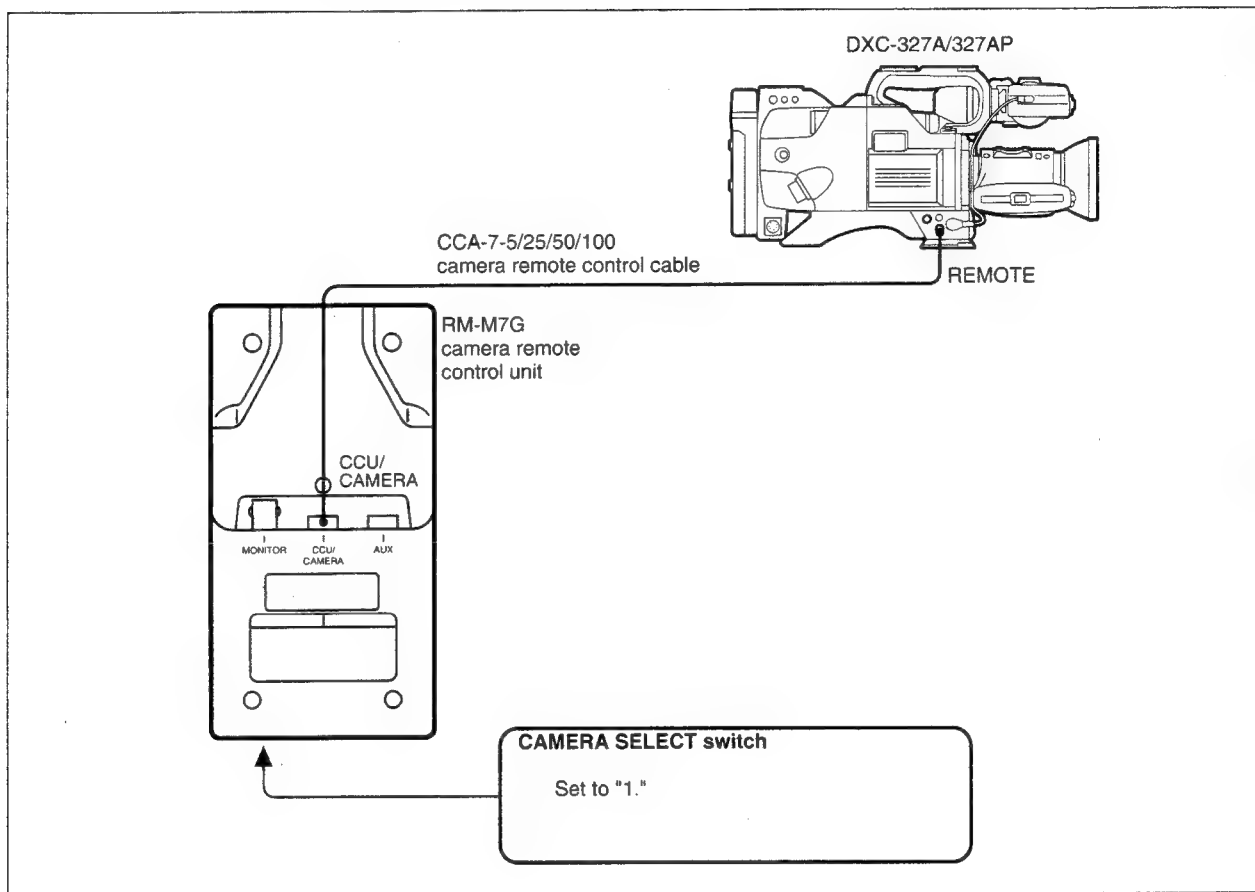
**White/black balance adjustment**

- When the W/B BALANCE selector on the CCU is set to PRESET or MANUAL, the CCU adjusts the white balance and takes priority over the setting done on the camera.
- If the W/B BALANCE selector is set to AUTO, the white balance can be adjusted using either the camera or CCU controls.
- Do automatic black balance adjustments by setting the W/B BALANCE selector on the CCU to AUTO or PRESET, and the AUTO W/B BAL switch on the camera to BLK.

## Connections

### Connecting a Remote Control Unit

By connecting an RM-M7G Remote Control Unit (optional), you can control the principal camera functions at a distance. For more details on using the remote control, consult your Sony dealer.



#### Notes on use with the RM-M7G

- Set the CAMERA SELECT switch on the RM-M7G to "1".
- When the camera is connected to a RM-M7G, the GAMMA and KNEE controls of the RM-M7G do not affect the video output signal neither the output signal from the TEST connector of the camera.
- The following switches on the camera do not function.
  - GAIN selector
  - WHITE BAL selector
  - SHUTTER switch
  - BARS switch
  - ABL switch

## Using the Camera with a VTR

When the DXC-327A/327AP is used with the CA-537/537P, the following VTRs can be used with this camera system.

Depending on the VTR connected to the camera, the switch setting on the camera adaptor, the usable cable, and the functions of the camera and the VTR vary.

### Setting of the VTR SELECT switch on the CA-537/537P

Set the VTR SELECT switch on the CA-537/537P depending on the VTR to be connected. If the setting is not correct, video and audio signals may not be recorded normally.

Connected VTR	Setting of the VTR SELECT switch	Output video signal	Microphone output level
Sony BVU-150/150P, BVW-35/35P, VO-6800/6800PS	1	Composite	-60 dB
Sony VO-8800/8800PS	3	Y/C	-60 dB
VHS format VTR AG-6400 (Panasonic)	2	Composite	-20 dB
S-VHS format VTR AG-7400 (Panasonic)	3	Y/C	-20 dB

#### Notes

- When the VO-6800/6800PS portable VTR is connected to the camera, set the -20 dB/-60 dB camera microphone input selector on the VTR to -60 dB.
- When a CCU-M3/M3P/M7/M7P Camera Control Unit is used, be sure to set the VTR SELECT switch to "1".

# Connections

## Usable camera cables and power sources

Be sure to use the cable and AC power adaptor appropriate to the connected VTR.

Connected VTR	Connecting cable	Power supply from the VTR to the camera	AC power adaptor for the VTR
BVU-150/150P	CCZQ-nA	Yes	AC-500/500CE
VO-8800/8800PS		Yes	CMA-8A/8ACE
VO-6800/6800PS		Yes	CMA-8A/8ACE
AG-6400 (Panasonic)	CCZJ-2	No	CMA-8A/8ACE
AG-7400 (Panasonic)	CCZQ-nA	No	CMA-8A/8ACE

### Note

When the AG-6400/7400 is used, an independent power source must be provided for the camera.

## Differences in functions

Available functions differs depending on the VTR connected as shown below.

Connected VTR	Remote control of VTR start/stop	REC/TALLY indicator		BATT alarm indication	Audio monitor (on the camera)	Picture shown on the viewfinder	
		REC indication	VTR alarm			During recording (picture from the camera)	During playback (picture from the VTR)
BVW-35/35P	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BVU-150/150P							
VO-6800/6800PS							
VO-8800/8800PS			NO	NO	NO	Yes <sup>a)</sup>	Yes <sup>a)</sup>
AG-6400 (Panasonic)					Yes		
AG-7400 (Panasonic)							

<sup>a)</sup> A picture from a VTR can be seen only when you press the RET button on the zoom lens.

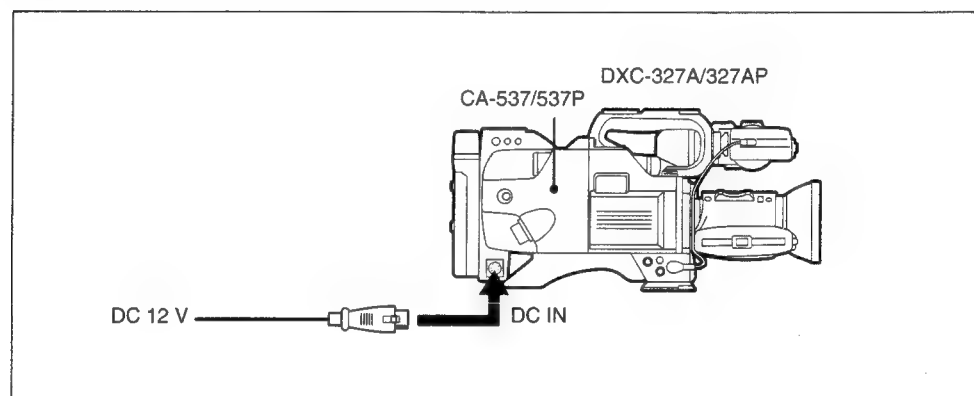
# Power Sources

When the CA-537/537P Camera Adaptor is attached, the DXC-327A/327AP camera is powered by one of three types of power supply: external DC, battery DC, or AC power.

## Using a DC Power Supply

### Connecting to a DC power outlet

Connect a connecting cable from the DC IN connector on the camera adaptor or on a VTR to the external power source of 12 volts DC.



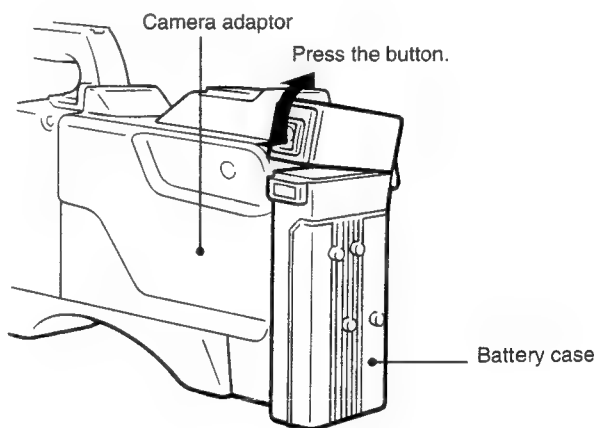
## Power Sources

### Using a Battery Pack

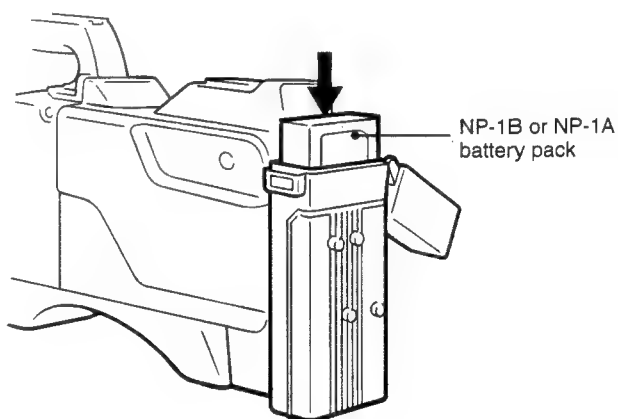
Before using the battery pack, recharge the battery (see “Charging the battery” on the next page).

#### Installing the battery pack

- 1 Press the button at the side of the battery case lid and pull open the lid.



- 2 Slide the battery into the battery case with the arrow on the battery pack pointing downward.





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## Continuous battery operation time

When a camera adaptor is attached, the fully charged battery pack can continuously power the camera and viewfinder for a certain amount of time (see the table below). However, with the EVV-9000/9000P Videocassette Recorder attached, battery life is shortened.

Battery type	Battery life with CA-537/537P installed	Battery life with EVV-9000/9000P installed
NP-1B	About 135 minutes	About 85 minutes
NP-1A	About 100 minutes	About 65 minutes

---

## Battery life warning

When the battery is nearly exhausted, the warning "BATT XX.XV" appears on the viewfinder screen showing the voltage level in the "XX.X". If you continue to operate the equipment without changing the battery, the BATT indicator of the viewfinder also lights up to indicate that the battery must be replaced immediately.

---

## Charging the battery

Recharge the battery pack before each use using the battery charger shown in the table below.

Battery pack	Battery charger	Charging time
NP-1B	BC-1WB	About 95 minutes
NP-1A	BC-1WB or BC-1WA	About 70 minutes

## Power Sources

### Using Power Supplied Through the Camera Adaptor

To use the following equipment, make sure you have attached a CA-537/537P Camera Adaptor.

---

#### Using a portable VTR

Connect the VTR/CCU/CMA connector on the camera adaptor and the VTR 14-pin Q-type camera connector on the VTR using the optional CCZQ Camera Cable. Then the power is automatically supplied from the VTR to the camera.

For the power source for the VTR, refer to the operation manual for the VTR. See the connecting diagram for "Connecting a Portable VTR" (page 1-32.)

**Note**

Before operating the camera, make sure that the power supplied from the VTR to the camera is sufficient. If the power supply capacity of the VTR is not sufficient, the camera must be powered independently.

**Note on the operating time**

The continuous operating time depends on the operation on the VTR. Fast-forwarding or rewinding tape may reduce the operating time.

**Battery life indication**

The life of the batteries installed in the portable VTR is indicated by the BATT indicator on the viewfinder. If the BATT indicator starts flashing, replace the battery with the charged one. If the camera continues operating without replacing a battery, the BATT indicator will stay lit. On some VTRs, the battery life is not indicated. (See page 1-38.)

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#### Using a CCU-M3/M3P and CCU-M7/M7P camera control unit

Connect the camera control unit and the VTR/CCU/CMA connector on the camera adaptor using the optional camera cable. Then the power is automatically supplied to the camera. (See page 1-34.)

---

#### Using a CMA-8A/8ACE camera adaptor

Connect the CMA-8A/8ACE Camera Adaptor and the VTR/CCU/CMA connector on the camera adaptor using the optional camera cable. Then the power is automatically supplied to the camera. (See page 1-33.)

## Priority of power sources

When two or three power sources are simultaneously connected to the camera, the camera operation only uses one of the power supplies according to the numerical priority listed below (starting with DC power first). The other power sources are automatically cut off.

Type of power (priority)	supplied (on the camera adaptor) via the
1. DC power	DC IN connector
2. NP-1B or NP-1A battery	Battery pack compartment
3. AC power	VTR/CCU/CMA connector

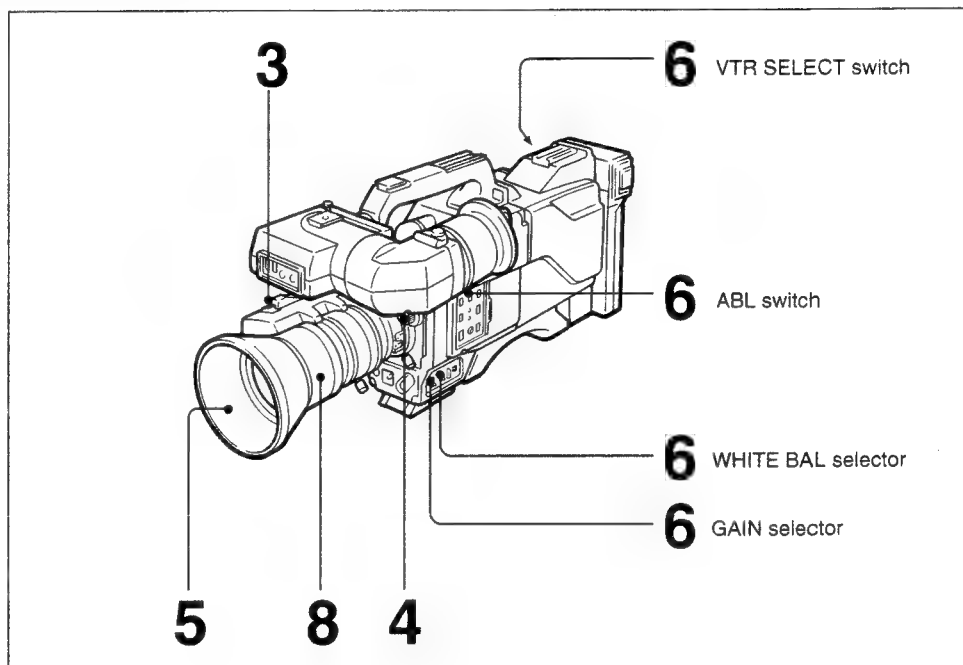
When the EVV-9000/9000P Hi8 format VTR or the PVV-1/1P Betacam format VTR is attached, the camera operates on one of the two types of power sources according to the numerical priority listed below.

Type of power (priority)	supplied (on the VTR) via the
1. DC power	DC IN connector
2. NP-1B or NP-1A battery	Battery pack compartment

# Basic Operations

The following is the basic procedure for operating the camera. To get the most out of the videotaping operation, we recommend you do the adjustments and settings on the following pages.

## Operating the Camera



- 1** Check that equipment connections, such as to the VTR, are correct (see pages 1-31 to 1-36.)
- 2** Turn the power switches to the camera and the all the connected equipment to the ON position.
- 3** Set the IRIS selector on the zoom lens to "A" (see page 1-54).
- 4** Select the appropriate position for the FILTER selector for the ambient lighting (see page 1-56).
- 5** Remove the lens cap.
- 6** Set the following switches:
  - ABL switch: OFF
  - GAIN selector: 0 dB
  - WHITE BAL selector: A or B (see page 1-59)
  - VTR SELECT switch (on the camera adaptor): corresponding to the VTR used
- 7** Point the camera at an object that is at least one meter (3 1/2 feet) from the lens.
- 8** Adjust the focus by turning the focus ring while looking at the image on the monitor or viewfinder screen.

## Recording with a Portable VTR

- 1** Turn the power switches to the camera and connected equipment to the ON position.
- 2** Set the VTR to Record Standby mode.
- 3** Adjust the black balance and white balance. (For details on how to do this, see "Adjusting the Black Balance," page 1-57 and "Adjusting the White Balance," page 1-59.)
- 4** Point the camera at a reference object and adjust the lens.  
Adjust the Iris (see page 1-54)  
Zoom (see page 1-64)  
Close-Up Function (see page 1-67)  
Focus
- 5** To start recording, press the VTR button on the camera, the VTR START/RETURN VIDEO button on the camera adaptor, or the VTR button on the lens.  
The REC/TALLY indicator in the viewfinder lights up during recording.
- 6** To stop recording, press the VTR START/RETURN VIDEO button or the VTR button used in Step 5 above.

## Recording with a Table-Top VTR

To record using a table-top VTR, follow the procedure explained for recording with a portable VTR except for the following:

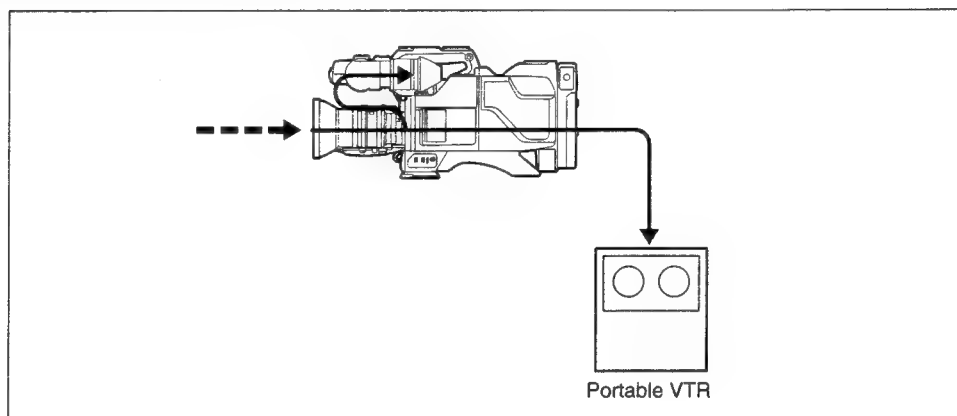
- Start and stop recording using the function buttons on the VTR.
- The REC/TALLY indicator in the viewfinder does not function.
- The return video and the playback picture cannot be monitored on the viewfinder screen.

## Basic Operations

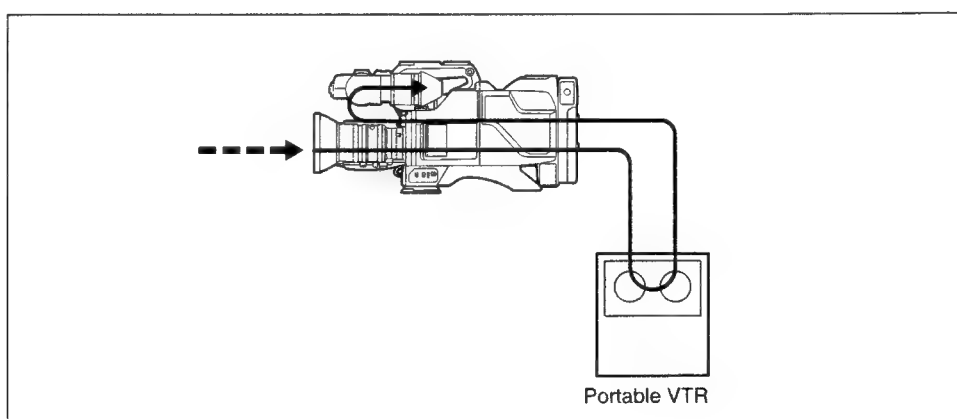
### Monitoring the VTR Picture and Audio Output

You can see the following three types of images on the viewfinder screen when the camera and the VTR are connected with the CCZQ camera cable. Note, however, that with some types of VTRs, you may not be able to monitor a picture. (For more details on the pictures which can be seen on the viewfinder screen, see the "Differences in functions" on page 1-38).

#### A picture picked up by the camera (during recording)

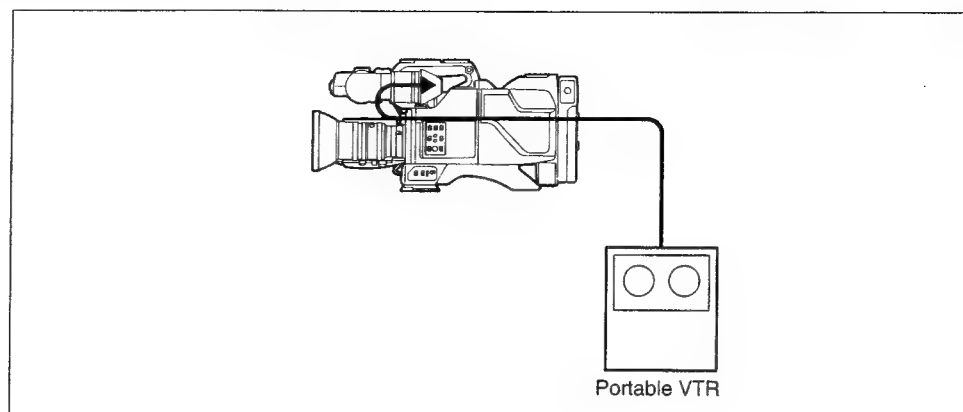


#### An E-E mode picture from the VTR (when the RET button on the lens is pressed during recording)



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## A playback picture (during playback)



### Noise on the monitoring

While the playback picture from the VTR displays on the viewfinder screen, some of the video signals output from the camera such as the sync signal, may mix with the playback picture so that streaks of noise roll horizontally or vertically across the screen.

---

## Monitoring the audio output

You can monitor the audio signal during recording and reviewing by connecting an earphone to the EARPHONE jack on the camera adaptor. Note, however, that with some types of VTR, you may not be able to monitor the audio output.

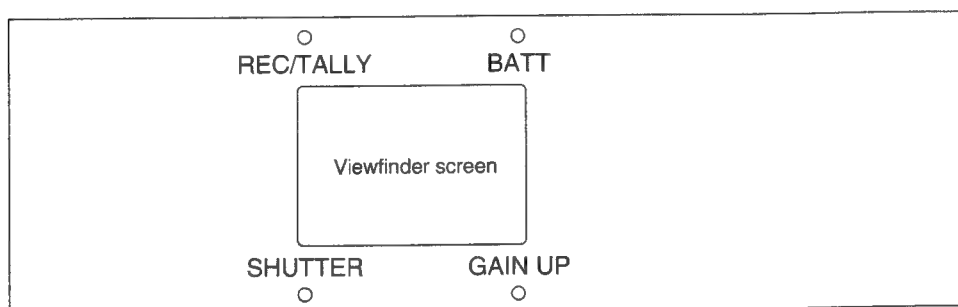
# Adjustment and Settings

In the electronic viewfinder, the viewfinder screen itself shows you the settings of switches such as black/white balance and gain. At the periphery of the screen the viewfinder indicators show the status of operations such as battery level.

## Reading Indications in the Electronic Viewfinder

### Viewfinder screen and status indicators

Four indicators (see illustration below) correspond to the status of the camera and connected equipment.



Indicator	Operates when...	Blinks	Lights up
REC/ TALLY	While recording, using a VTR connected with a CCZQ-A camera cable	Until the VTR enters the standby mode	During recording
	While using a VTR (equipped with a warning system), which is connected with a CCZQ-A camera cable	While the VTR is malfunctioning	—
	While using the CCU-M3/M3P	—	When a tally signal is transmitted from a video switcher, etc.
BATT	When the camera is powered by the battery pack	—	When the battery power becomes weak
	When a VTR is connected to the camera	When the battery power becomes weak	If you keep on operating the connected equipment after the indicator starts blinking
	When the CCU is connected to the camera <sup>1)</sup>		
SHUT- TER	Any time	—	When the SHUTTER switch of the camera is set to ON
GAIN UP	Any time	—	When the GAIN selector is set to 9 dB or 18 dB

<sup>1)</sup> The indicator's blinking speed denotes the following when the power is supplied to the camera from the battery installed in the CCU-M3/M3P:

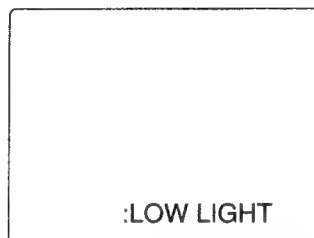
Slow: The battery is weak.

Fast: The camera control units' switches and controls are being used.



## Reading warning indications on the viewfinder display

Two indications, "LOW LIGHT" and "BATT 10.7V" appear on the viewfinder screen. The following explains what they mean and some possible remedies to the problems they indicate.



**Meaning** Lighting is insufficient.

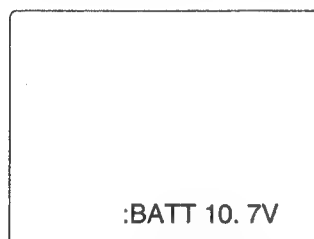
**Remedy**

- Increase the ambient lighting.
- Open the iris manually or activate the automatic iris function.
- Select an appropriate filter.
- Set the GAIN selector to 9 dB or 18 dB.
- Set the SHUTTER switch to OFF.

It is possible to switch the "LOW LIGHT" indication on or off.

**On:** Press the UP/ON button when the character display is in the current camera setting (see next page) mode.

**Off:** Press the DOWN/OFF button when the character display is in the current camera setting (see next page) mode.



**Meaning** The input voltage to the camera is about 10.7 volts.

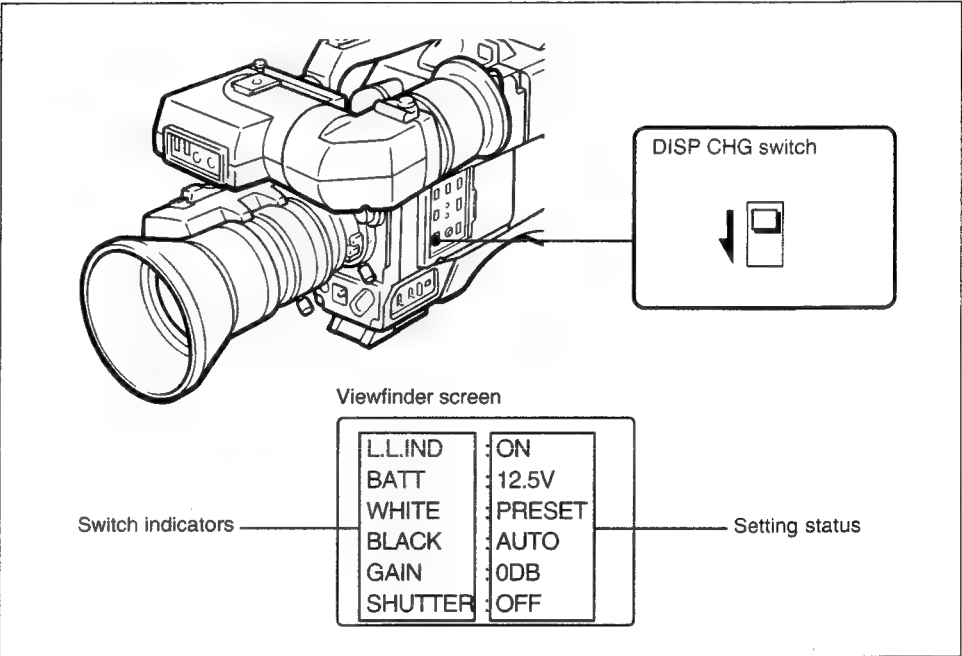
**Remedy** Replace the battery with a fully charged one.

If you continue recording with a weak battery, the quality of the recording will deteriorate.

# Adjustment and Settings

## Current settings

The viewfinder screen shows you the settings of the switches on the camera head, camera adaptor, and zoom lens. If necessary, change the settings using the procedures described in this section and the table below. Press the DISP CHG switch several times until the following (see illustration below) display appears on the viewfinder screen. The following table explains the meanings of the below screen display items.

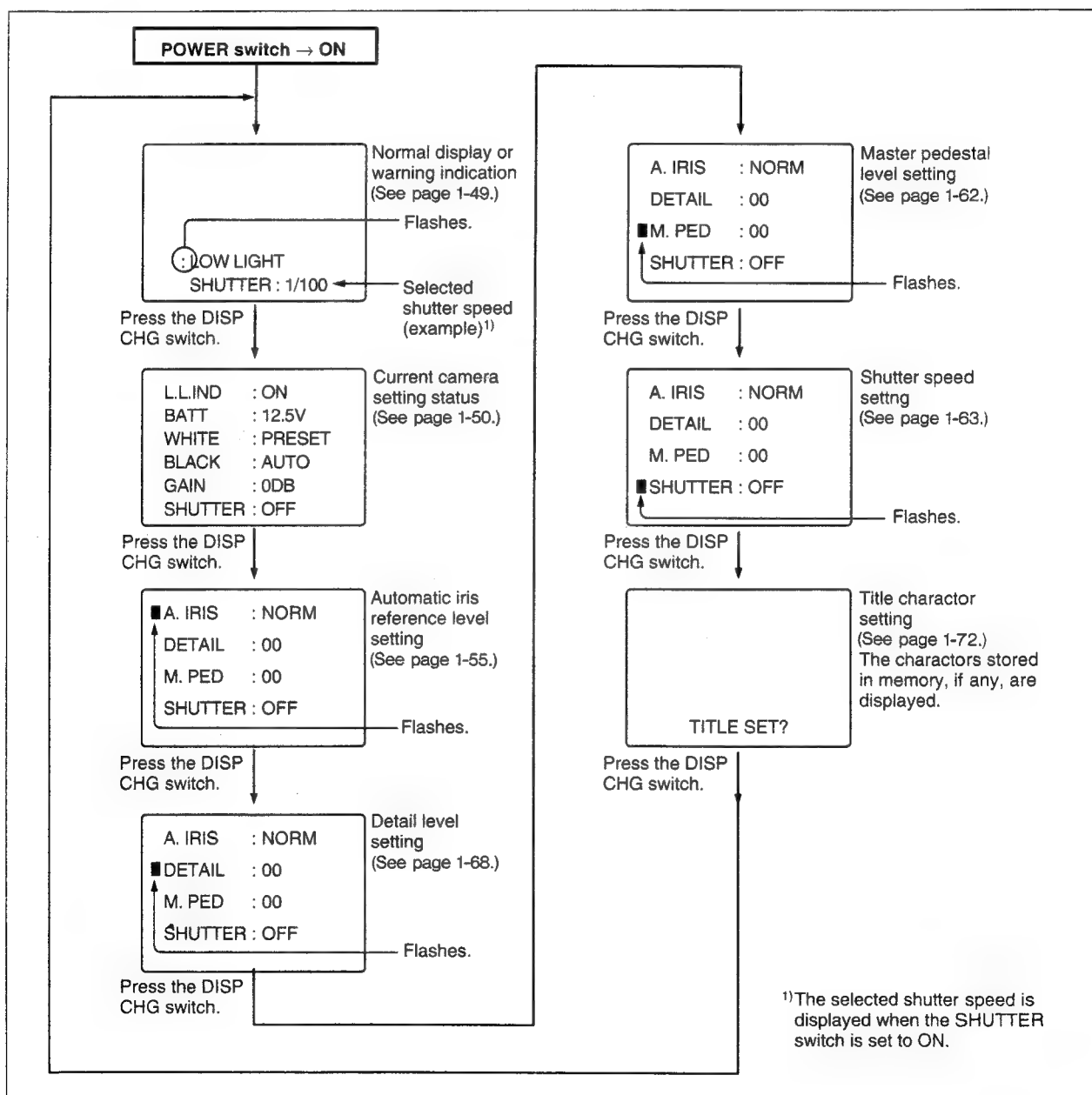


Switch Indicators	Meaning	Setting Status	Meaning
L.L. IND	Setting the "LOW LIGHT" indication	ON	"LOW LIGHT" is displayed.
		OFF	"LOW LIGHT" is not displayed.
BATT	Battery voltage	XX.XV	The battery voltage level is displayed.
WHITE	White balance adjustment mode	PRESET	For the factory preset value
		AUTO/A or AUTO/B	For automatic adjustment. (The white balance has been adjusted automatically using the volume stored in memory A or B.)
		MANUAL	For manual adjustment using the CCU-M7/M7P, CCU-M3/M3P Camera Control Unit, or RM-M7G Camera Remote Control Unit.
BLACK	Black balance adjustment mode	AUTO	For automatic adjustment
		MANUAL	For manual adjustment using the CCU-M7/M7P, CCU-M3/M3P Camera Control Unit, or RM-M7G Camera Remote Control Unit.
GAIN	Setting the video output level	0 DB, 9 DB, 18 DB	The video output level is 0 dB, 9 dB or 18 dB.
SHUTTER	Setting the shutter speed	OFF	The shutter speed cannot be changed.
		Shutter speed set	The set shutter speed is displayed.

## Reading the Viewfinder Screen Display Menu

The following chart shows how the display changes on the screen each time you press the DISP CHG switch.

In all modes, the black balance and white balance can be adjusted automatically. The display mode changes to the black balance or white balance adjustment mode during adjustment and returns to the selected display after the adjustment is complete.



## Adjustment and Settings

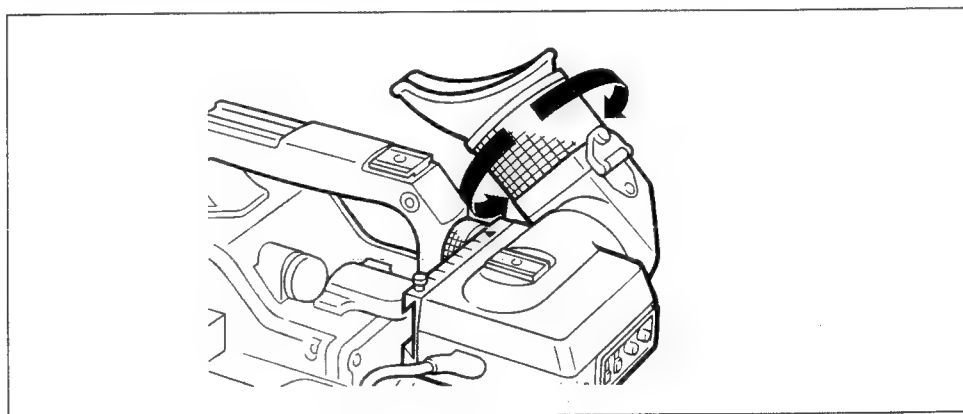
### Adjusting the Viewfinder Screen Display

After adjusting the viewfinder and the eye cup, make the following adjustments so that the viewfinder screen can be seen comfortably.

Note, however, that none of these settings affect the video output signal of the camera.

#### Adjusting the diopter

Because each eyesight of each individual is different, it may be necessary to adjust the diopter when a new camera operator uses the viewfinder.



- 1** Focus the lens.
- 2** Turn the diopter ring (see illustration above) within the range of  $-1D$  to  $-3D$  until the view is clear.  
The adjustable range can be changed to that of  $+1D$  to  $-1D$ .

#### Adjusting the contrast and brightness on the viewfinder

- 1** Set the BARS switch on the camera to ON.
- 2** Adjust the contrast and brightness using the CONTR and BRIGHT controls on the viewfinder while referring to the color bar signals on the viewfinder screen.
- 3** Set the BARS switch to OFF after adjustment.

---

## Adjusting the sharpness on the viewfinder

Set the PEAKING switch on the viewfinder to ON.

The image on the viewfinder screen sharpens so that the lens can be focused easily.

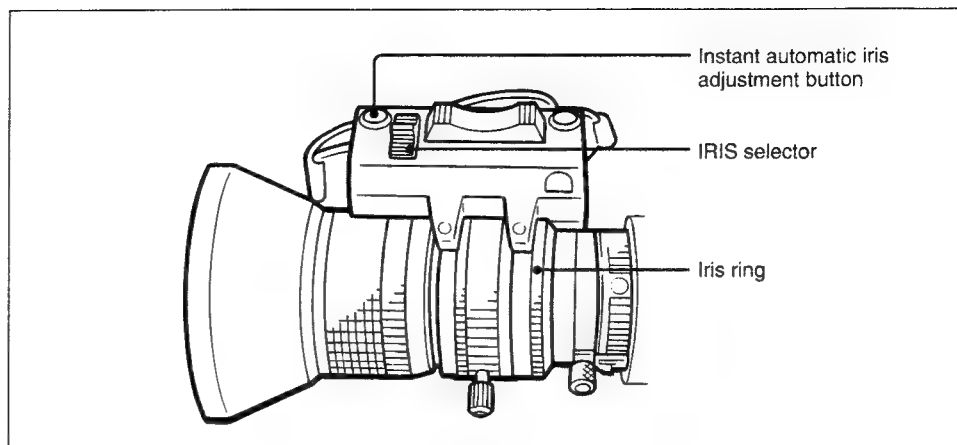
## Adjusting the Video Monitor

When you are using a color video monitor to monitor the video output, adjust the color on the monitor using the procedure that follows. (See the section, "Connecting an S-VHS Format Portable VTR" on page 1-31 for information on how to connect a video monitor and a VTR.)

- 1** Set the BARS switch to ON.
- 2** Adjust the color and hue controls on the monitor while viewing the color bars on the monitor screen.
- 3** Set the BARS switch to OFF.

## Adjustment and Settings

### Adjusting the Iris



#### Automatic iris adjustment

Set the IRIS selector to "A." This is the normal setting for the automatic iris. This setting makes the iris automatically adjust to the brightness of the object being shot.

#### Adjusting the iris manually

Use manual adjustment when recording an object against a bright sky or a scene with high contrast.

Set the IRIS selector to "M."

##### Using the zebra pattern for iris adjustment

The zebra pattern appears on the portion of the screen where the video output is about 70 to 80 IRE (NTSC) or 490 to 560 mV (PAL). This pattern acts as a reference when you manually adjust the iris. (For the procedure, see "Checking the Video Level," page 1-69.)

#### Temporary automatic adjustment

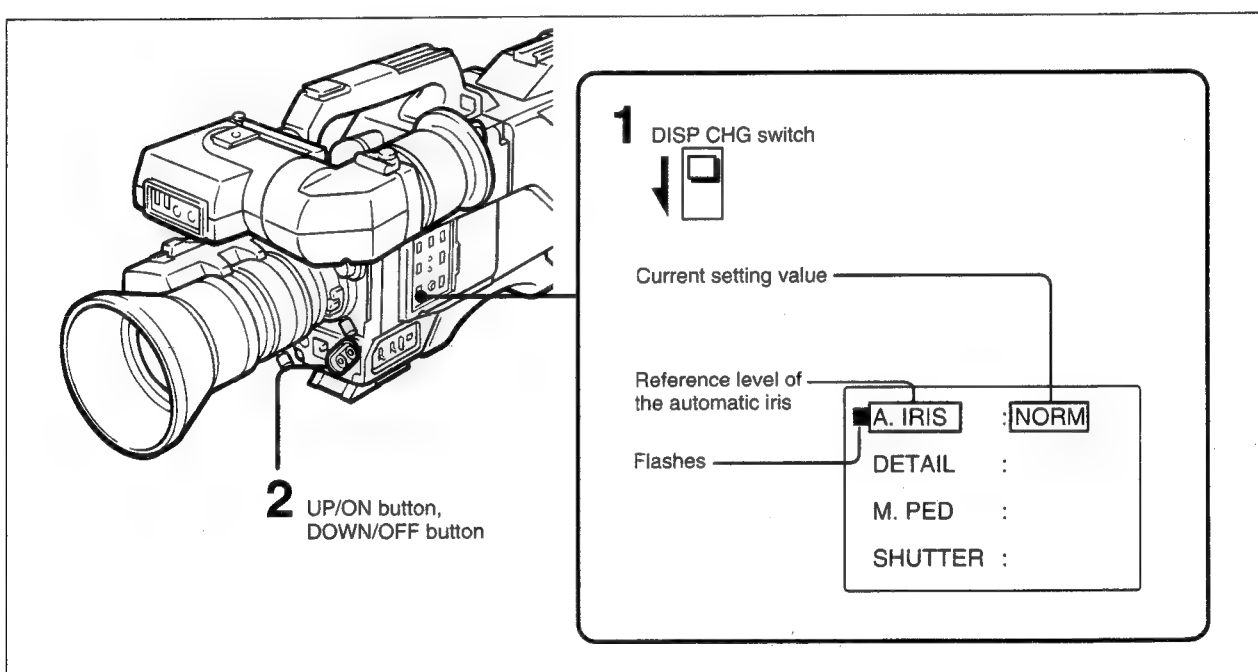
- 1** To automatically adjust the iris while the IRIS selector is set to "M", keep the Instant Automatic Iris Adjustment (IAIA) button depressed.
- 2** To fix the iris value that was set in Step 1, release the IAIA button. The iris remains fixed at this value until it is manually adjusted again.

## Selecting the automatic iris reference level

When adjusting the video level of a back-lit subject, you can change the automatic iris reference level setting. When you make the setting, it is retained in the memory of the camera.

The selectable values are as follows:

- -1.0
- -0.5
- NORMAL (reference value)
- 0.5
- 1.0



- 1** To select the automatic iris reference level, press the DISP CHG switch several times until the above display appears on the viewfinder screen.
- 2** Select the setting value (from -1.0 to 1.0).
  - To raise the value:** Press the UP/ON button
  - To lower the value:** Press the DOWN/OFF button
  - To reset to NORMAL:** Press the UP/ON and DOWN/OFF buttons simultaneously

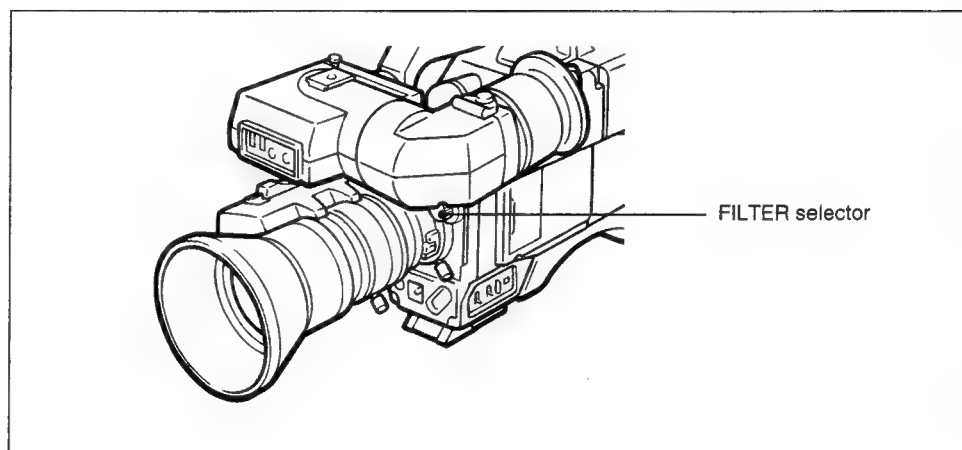
### Note

When you connect the CCU-M7/M7P, CCU-M3/M3P Camera Control Unit, or RM-M7G Camera Remote Control Unit to the camera, change the automatic iris reference level using the controls on the CCU-M7/M7P, CCU-M3/M3P, or RM-M7G. The controls on the camera do not operate this function.

## Adjustment and Settings

### Selecting the Filter

The color temperature changes according to lighting conditions. To compensate for this, use one of the color temperature conversion filters indicated in the table below. Turn the dial (see illustration below) to the correct filter number.



Filter number	Color temperature	Lighting conditions
1	3200K	Iodine lamp, sunrise or sunset
2	5600K + $\frac{1}{16}$ ND <sup>1)</sup>	Bright outdoor
3	5600K	Cloudy or rainy

<sup>1)</sup> ND: Neutral Density

### Using an ND filter

Exceptionally bright scenes such as a sunny day at the beach or snow-covered terrain will look “washed out” when videotaped. To videotape these scenes naturally, use an ND filter and set the FILTER selector to the “2” position. Use the above table as a guide for selecting the correct filter.

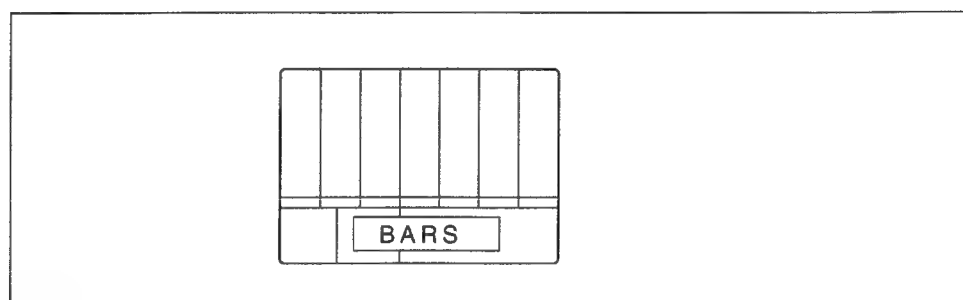


## Adjusting the Black Balance

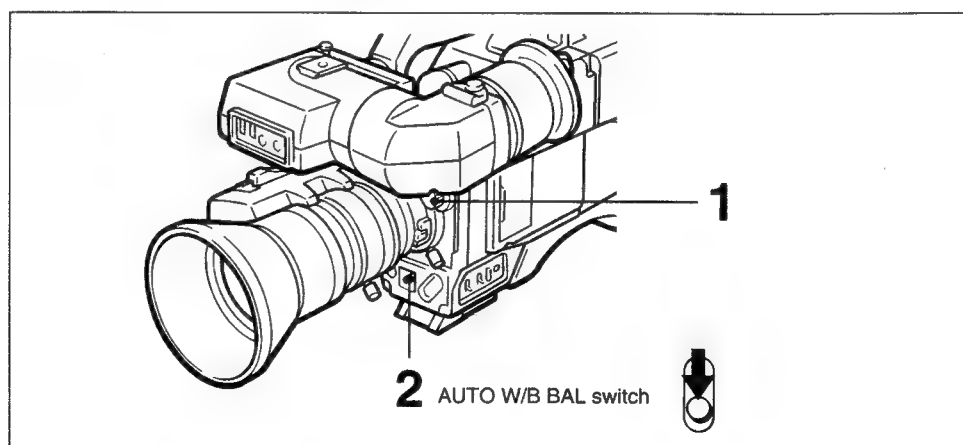
Adjust the black balance to ensure picture clarity and life-like color reproduction. When adjusting the black balance, the black set is adjusted simultaneously. The adjusted black balance value is retained in the memory of the camera and you need not re-adjust it later except for the cases mentioned later:

### Before You Begin

- Check that the W/B BALANCE switch on the camera control unit is not set to MANUAL. If it is set to MANUAL, you cannot adjust the black balance from the camera.
- Set the BARS switch to OFF so that the normal video signal outputs. If the video camera is outputting a color bar signal, you cannot adjust the black balance. If you try to do so, the viewfinder screen displays the following message over the color bars:



### Adjusting black balance

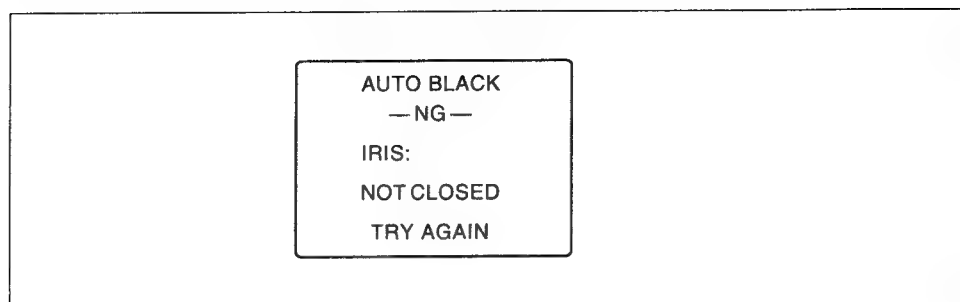


- 1 Select an appropriate filter with the FILTER selector.
- 2 Flip the AUTO W/B BAL switch to the BLK position, and when you hear a click, release the switch.  
 "AUTO BLACK -OP-" appears on the viewfinder screen during adjustment, and "AUTO BLACK-OK-" appears on the viewfinder screen when adjustment is complete.

## Adjustment and Settings

### If black balance cannot be done

The characters shown below are displayed on the viewfinder screen.



### When black balance adjustment is complete

During black balance adjustment, the iris is automatically closed. If the IRIS selector is set to “M”, you must open it manually to open it again.

---

### Re-adjust the black balance

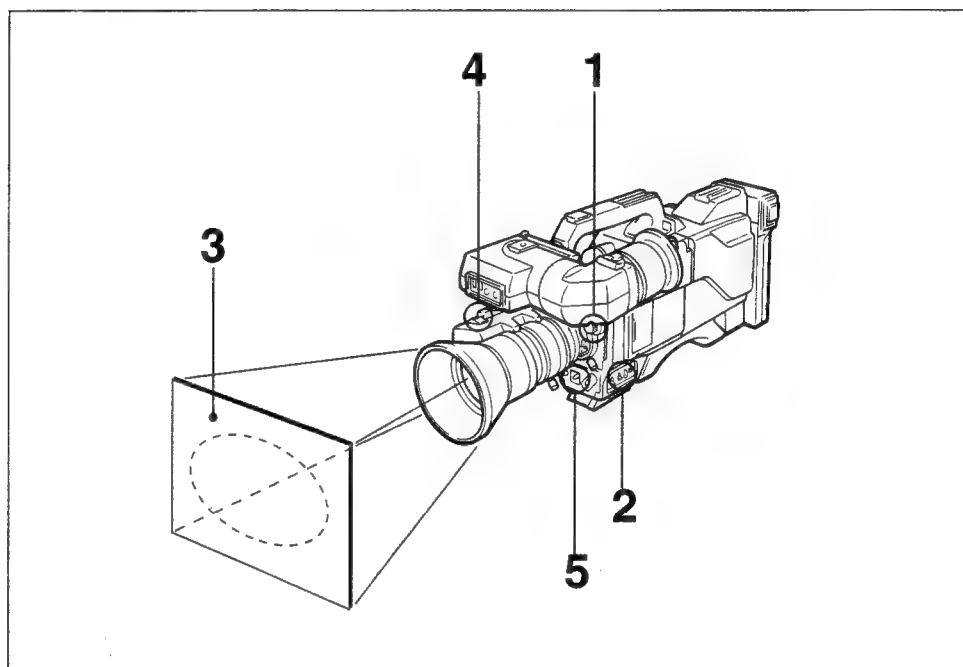
The adjusted value is stored on the camera, and is kept even when the power is turned off. Normally readjustment is not required except for the following cases.

- “MEMORY NG” appears on the viewfinder screen.
- The camera has not been used for a long time.
- The ambient temperature has changed radically.

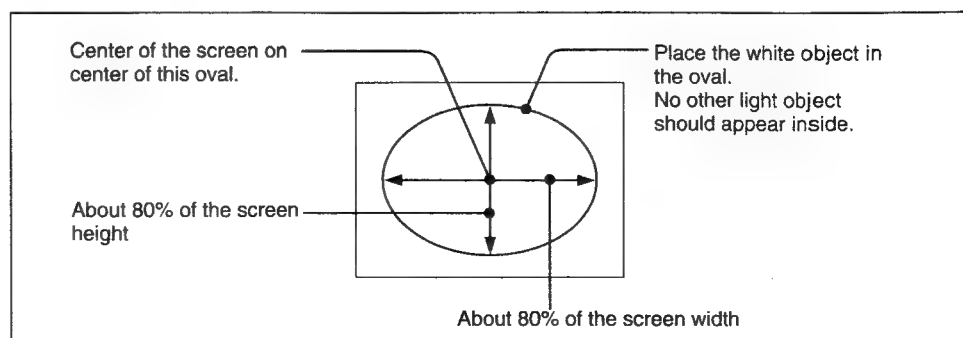
## Adjusting the White Balance

The white balance should be adjusted so that a white object is reproduced as white and life-like color is obtained. The white balance changes depending on the lighting conditions.

The camera has two memories, A and B, in which to store the adjusted white balance values. You can store two adjusted values under two different lighting conditions and recall either of the values according to ambient conditions.



- 1** Select the position of the FILTER selector on the camera head according to lighting conditions.
- 2** Set the WHITE BAL selector to "A" or "B".
- 3** Zoom up on a white object such as a white cloth or paper with the same lighting conditions as those for shooting. The minimum white area required for adjustment is as follows:

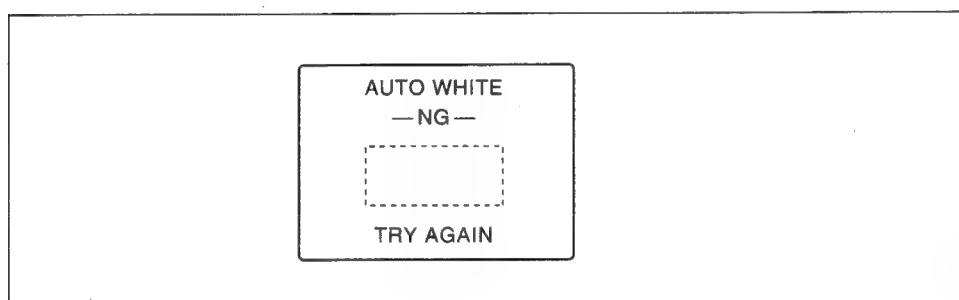


## Adjustment and Settings

- 4** Set the IRIS selector on the lens to "A".
- 5** Press the AUTO W/B BAL switch to the WHT position. When you hear a click, release the switch.  
 "AUTO WHITE -OP-" appears on the display screen during adjustment, and  
 "AUTO WHITE -OK-" appears on the viewfinder screen when adjustment ends. The camera stores the adjusted white balance value in the selected memory.

### When the white balance cannot be adjusted automatically

The following characters appear on the screen display if white balance cannot be adjusted automatically. Re-adjust the white balance after taking the measures required in the chart below.



Display	Causes and measures
LOW LIGHT	Light is insufficient. Add illumination or raise the video output level with the GAIN selector.
??	The object is not white or very bright light appears in the picture. Change the object to an appropriate one.
C. TEMP. LOW CHG. FILTER	Color temperature is too low. Select the appropriate filter with the FILTER selector.
C. TEMP. HI CHG. FILTER	Color temperature is too high. Select the appropriate filter with the FILTER selector.
WHITE: PRESET	When the WHITE BAL selector is set to the PRE position. Set to the A or B position.
WHITE: MANUAL	When the CCU is connected, and the manual white balance adjustment is selected on the CCU. Select to the automatically adjust.
BARS	When the color bar signal is output. Set the BARS switch to "OFF" position.

---

### When you have no time to adjust the white balance

- 1** Select the appropriate filter with the FILTER selector on the camera depending on the lighting conditions.
- 2** Set the WHITE BAL selector to PRE.  
You can obtain the approximate white balance.

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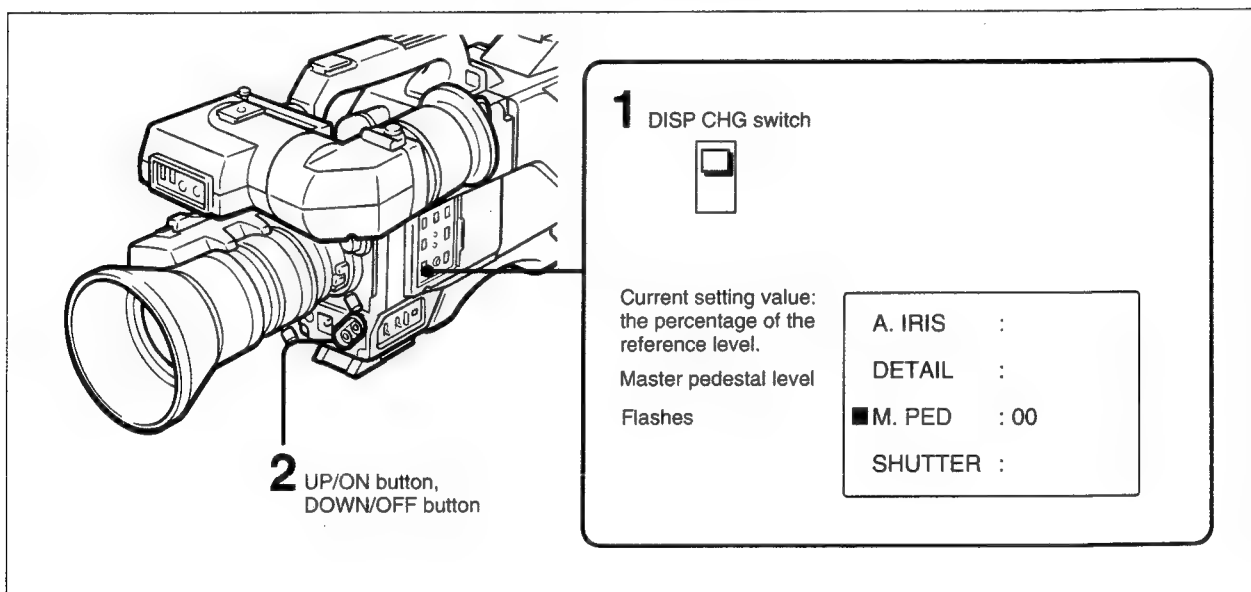
### Readjustment

The adjusted value is kept even if the power is turned off. So readjustment is not required.

## Adjusting and Setting

### Adjusting the Contrast

To adjust the contrast, change the pedestal level. When the master pedestal level is raised, the dark portion of the picture brightens, and when the level is lowered, the corresponding portion darkens. You can change the level from about  $-30\%$  to  $+30\%$  of reference level (0.7 V) in increments of 1%. The adjusted master pedestal level is kept in the memory of the camera.



- 1 Press the DISP CHG switch several times until the display above appears on the viewfinder screen.
- 2 Change the master pedestal.
  - To raise the level:** Press the UP/ON button on the camera head.
  - To lower the level:** Press the DOWN/OFF button on the camera head.
  - To reset the level to the reference level:** Press the UP/ON and DOWN/OFF buttons simultaneously.

#### Notes

- If the CCU-M7/M7P, CCU-M3/M3P Camera Control Unit or RM-M7G Camera Remote Control Unit is connected to the camera, set the master pedestal level from the CCU or RM-M7G. It cannot be set on the camera.
- To check the master pedestal level on a waveform monitor during adjustment, set the ABL switch on the camera to OFF. When the ABL switch is set to ON, appropriate waveform will not appear on the monitor screen.

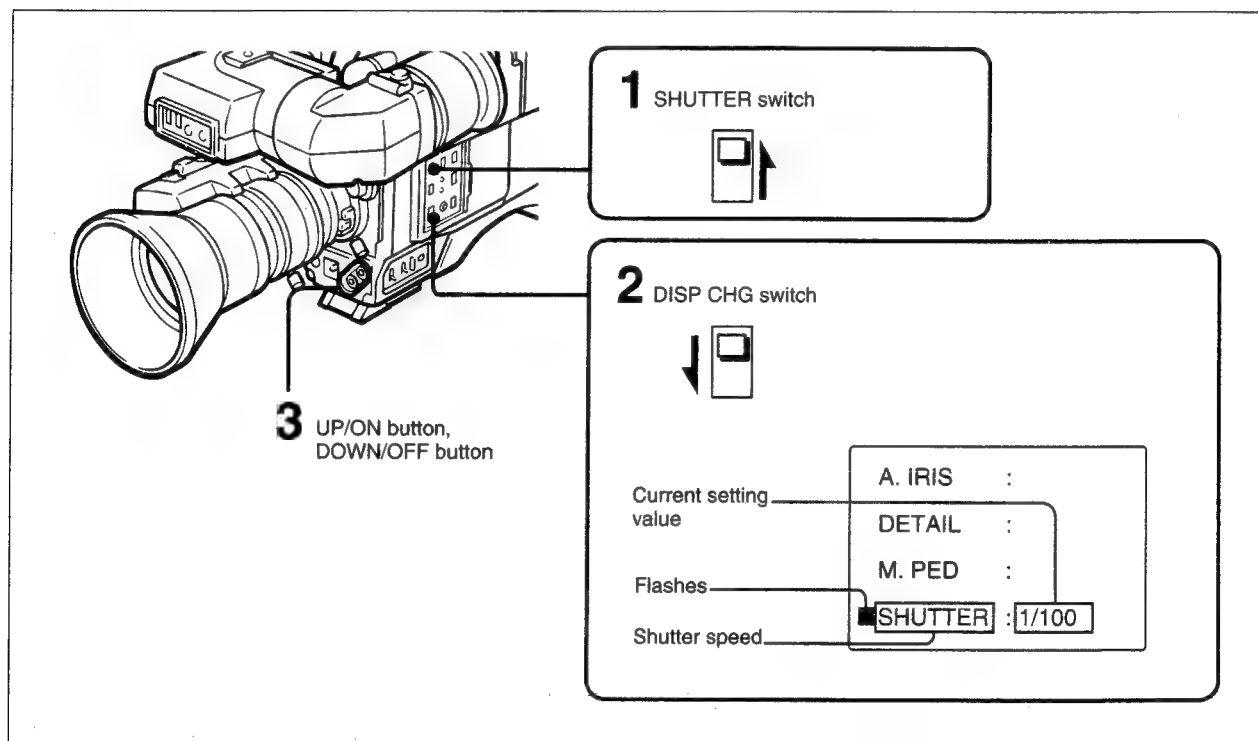
## Selecting the Shutter Speed

The shutter speed is factory set to 1/100 for NTSC and 1/60 for PAL. You can change the shutter speed if necessary. Select the shutter speed from the following:

For NTSC: 1/100, 1/250, 1/500, 1/1000, 1/2000

For PAL: 1/60<sup>1)</sup>, 1/250, 1/500, 1/1000, 1/2000.

Your selection is retained in the memory of the camera.



- 1** To change the shutter speed, set the SHUTTER switch on the camera to ON.
- 2** Press the DISP CHG switch several times until the display above appears on the display screen.  
If the SHUTTER switch is set to OFF, "OFF" appears at the current setting value.
- 3** Select the shutter speed.  
**To increase the shutter speed value:** Press the UP/ON button on the camera head.  
**To decrease the value:** Press the DOWN/OFF button on the camera head.  
**To reset the value to 1/100 (for NTSC) or 1/60 (for PAL):** Press the UP/ON and DOWN/OFF buttons simultaneously.

<sup>1)</sup> When you are using the RM-M7G to control the camera, the 1/100 setting on the RM-M7G sets the camera shutter speed to 1/60 and "1/60" appears on the screen display in the viewfinder. This is to prevent flickering when you are shooting a CRT screen.

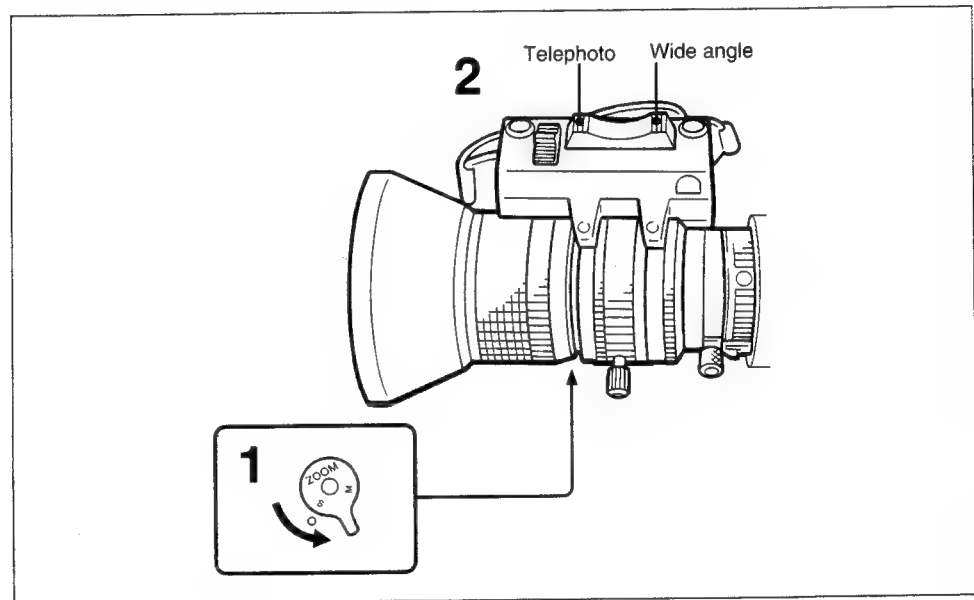
# Advanced Operations

## Zoom Operation

You can go from wide angle to telephoto shots by using the motorized zoom or doing the zoom manually.

### Motorized zoom

Zooming at a constant speed is obtained.

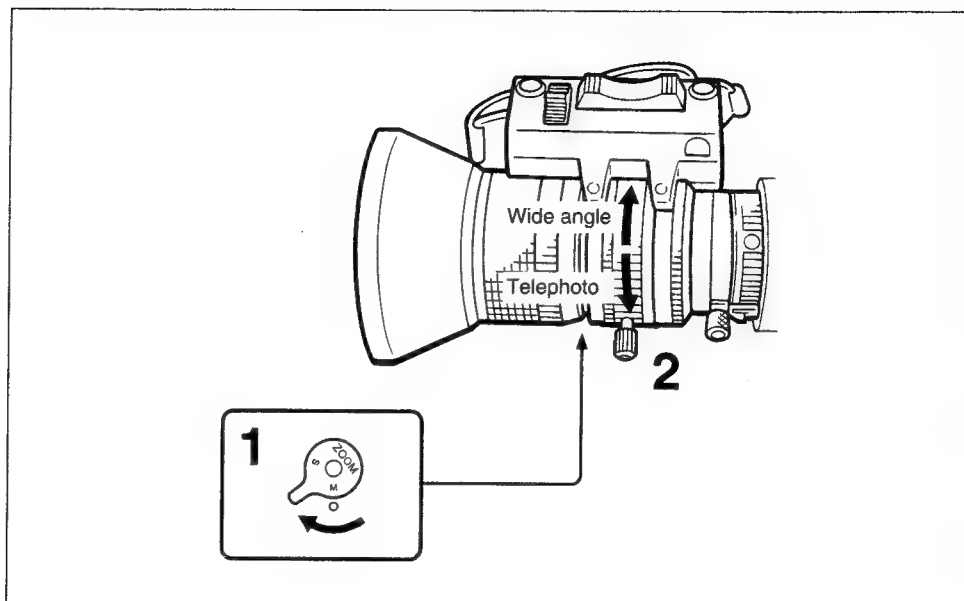


- 1** Set the ZOOM selector to the “S” (servo) position.
- 2** Press either end of the motorized zoom switch.  
To zoom faster, press all the way down on the motorized zoom switch. Press the switch lightly to zoom more slowly.



## Manual zoom

Manual zoom allows more precise control over the zooming speed.



- 1** Set the ZOOM selector to the “M” (manual) position.
- 2** Position the Manual zoom lever to the appropriate angle.

## Tips on using the zoom

### Correct focusing

If the subject is in focus in the telephoto position, it will remain in focus when you zoom back to wide angle.

### For a more stable picture

We recommend placing the camera on a tripod when using the zoom. If you zoom with the camera on your shoulder, stand as steadily as possible.

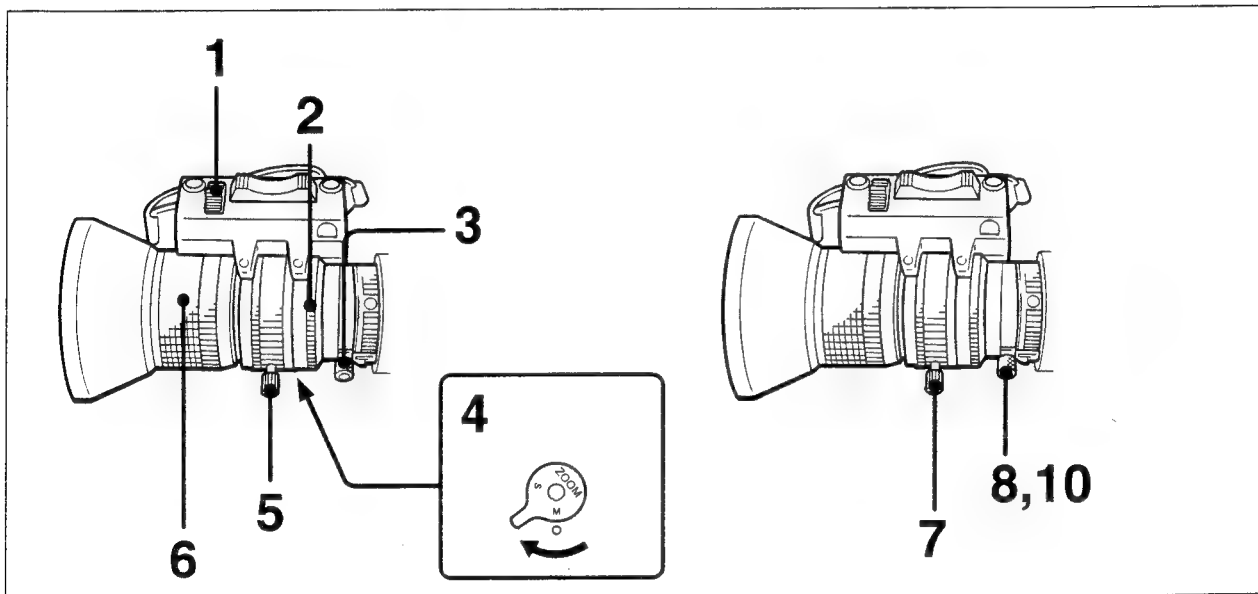
### Positioning the object at the center of the screen

For zoom-in, adjust the focus in the telephoto-position, and set to the wide angle position. Then start to zoom in. Make sure that the object stays at the center of the screen while you are using the zooming.

## Advanced Operations

### Adjusting Flange Focal Length

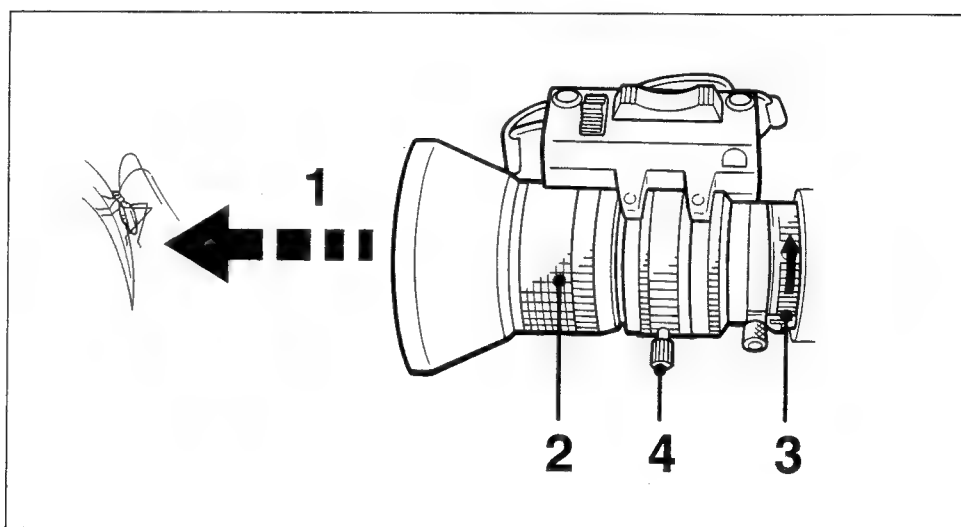
The proper flange focal length adjustment ensures that the object is in focus both at the wide-angle and telephoto position when using the zoom. Once you have made the flange focal length adjustment, you do not have to re-adjust the lens as long as the lens stays on the same camera.



- 1** To adjust the focal flange, set the IRIS selector to M.
- 2** Set the iris ring to 1.4.  
Position the supplied chart for iris adjustment and illuminate the chart so that the proper video level is reached when the iris ring is at 1.4.
- 3** Loosen the screw on the Ff adjustment ring.
- 4** Set the ZOOM selector to M.
- 5** Turn the manual zoom lever to 90, telephoto position.
- 6** Turn the focus ring until the chart is in focus at about three meters (10 feet) from the lens.
- 7** Turn the manual zoom lever to 7.5, wide-angle position.
- 8** Turn the Ff adjustment ring and focus on the chart used in Step 6.  
Do not turn the focus ring for focusing.
- 9** Repeat Steps 5 through 8 until the chart is in focus both at the telephoto position and at the wide-angle position.
- 10** Tighten the screw on the Ff adjustment ring firmly.

## Doing Close-Ups

The close-up or macro function lets you zoom in flowers, insects and even photographs. The minimum distance from the lens to the object is 10 mm in the 7.5 wide-angle zoom position.



- 1** Adjust the distance between the lens and the object to get the desired image size.
- 2** Set the focus ring to the  $\infty$  (infinity) setting.
- 3** Turn the MACRO ring until it stops while pushing the button in the direction of the MACRO arrow.
- 4** Focus on the object by turning the manual zoom lever with the ZOOM selector set to M.
- 5** When the close-up operation is complete, return the MACRO ring to its original position.

### To reduce the object size on the screen

Adjust the focus following steps 1 through 4 above, then turn the MACRO ring slightly toward its original position and adjust the focus with the manual zoom lever again.

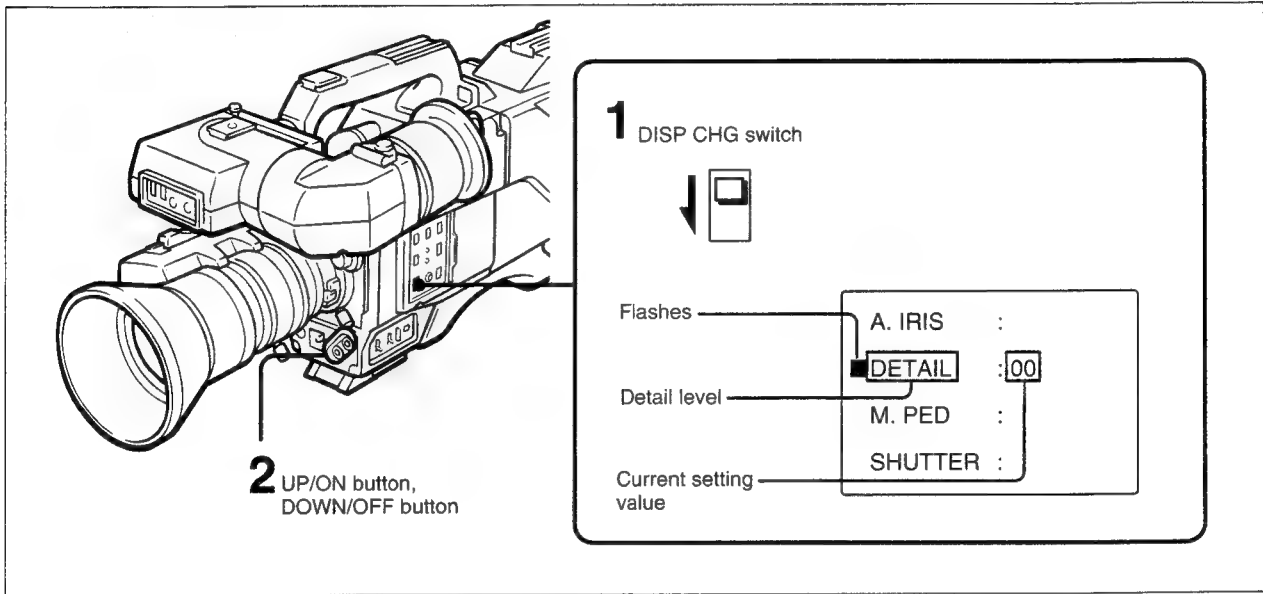
### Note on the focus ring

If the focus ring is set to  $\infty$  (infinity) while the MACRO ring is turned to "MACRO," the focus can be continually adjusted from the close-up position to  $\infty$  (infinity) with the manual zoom lever.

## Advanced Operations

### Adjusting the Sharpness of the Picture

You can increase (harden) or decrease (soften) the sharpness of the picture. Change the value of the detail level to increase or decrease the sharpness. The detail level can be set from -99 to +99 of the factory-set reference level (00).



- 1** Press the DISP CHG switch several times until the above display appears on the viewfinder.
- 2** Change the value of the detail level.
  - To increase the value:** Press the UP/ON button on the camera head.
  - To decrease the value:** Press the DOWN/OFF button on the camera head.
  - To reset the value to the reference level:** Press the UP/ON and DOWN/OFF buttons simultaneously.

#### Note

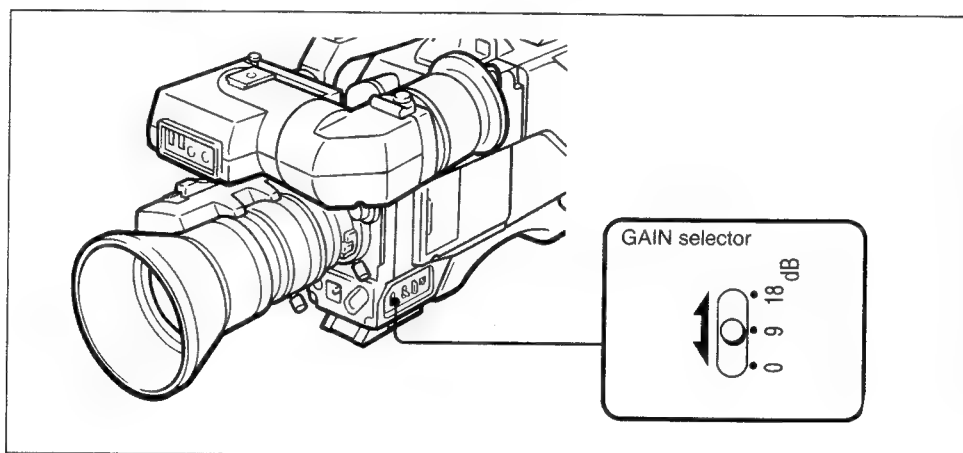
If you increase the video output level when you increase the detail level, the noise in the picture increases.

#### When using the RM-M7G

When the RM-M7G Camera Remote Control is connected to the camera, the detail level can be changed from the RM-M7G.

## Selecting the Output Level

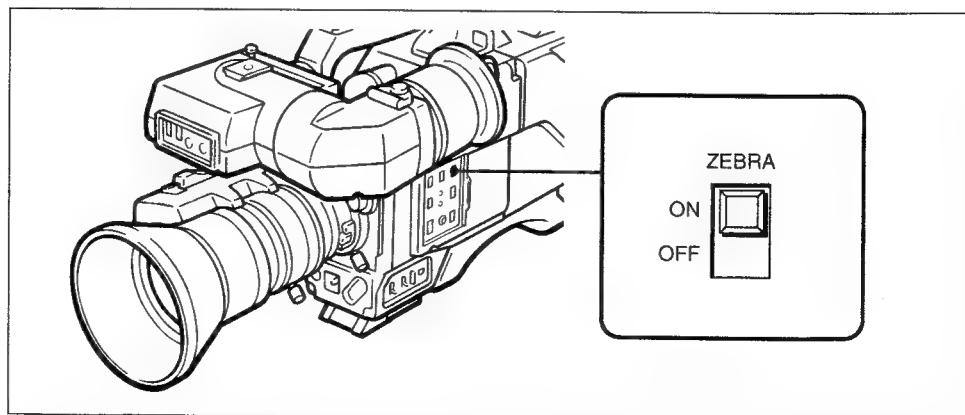
If you cannot get a clear picture because of insufficient light, set the GAIN selector to a higher or lower position. (The GAIN selector is normally set to “0 dB”.) The video output level can be raised by 9 dB by setting the GAIN selector to “9 dB” and by 18 dB by setting the selector to “18 dB”.



## Checking the Video Level

Use the zebra pattern (generated by the camera) as a reference when adjusting the iris manually. The zebra pattern indicates areas of the picture where the video level is approximately 70% to 80% (for NTSC) or 490 mV to 560 mV (for PAL): When the ZEBRA switch is set to ON, a zebra pattern appears on the part of the viewfinder screen where the video output level is 70 to 80 IRE or 490 to 560 mV. Adjust the iris so that the zebra pattern appears over the subject being shot (for example, the face of a back-lit person).

If it is not necessary to use the zebra pattern to adjust the iris, set the ZEBRA switch to OFF.



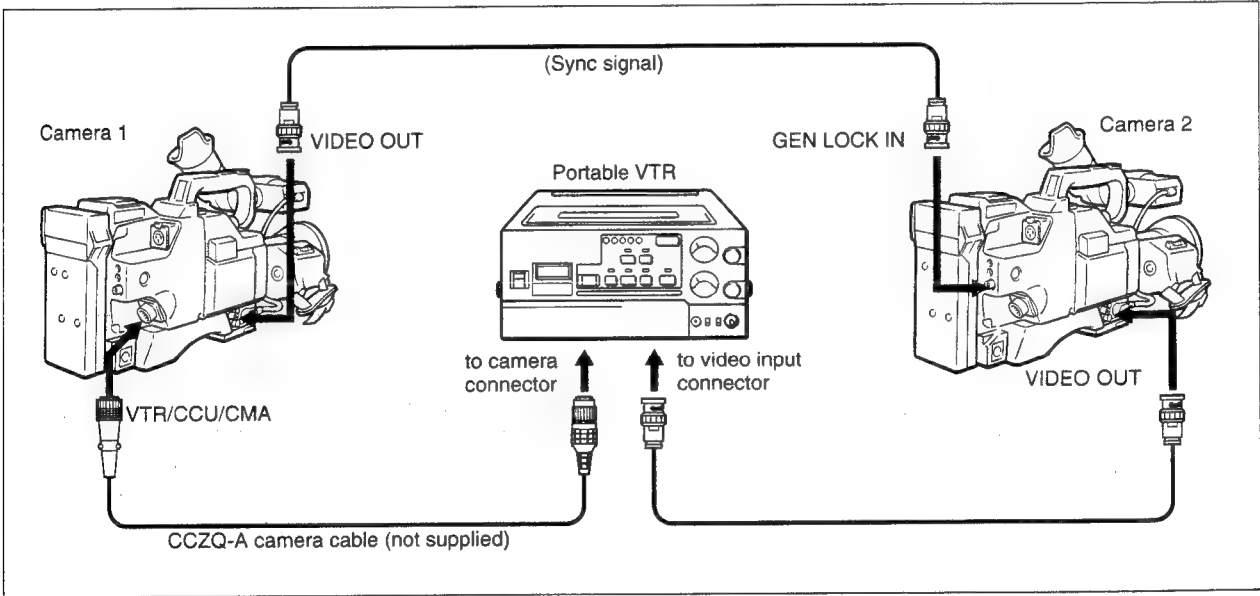
# Advanced Operations

## Synchronizing Two or More Cameras (Without Using a Camera Control Unit)

When a BS or VBS signal is connected to the GEN LOCK IN connector on the camera adaptor, the camera synchronizes with the connected signal. Use the GEN LOCK IN connector when you are using two or more cameras without a camera control unit. (See the illustrations below for sample connections.)

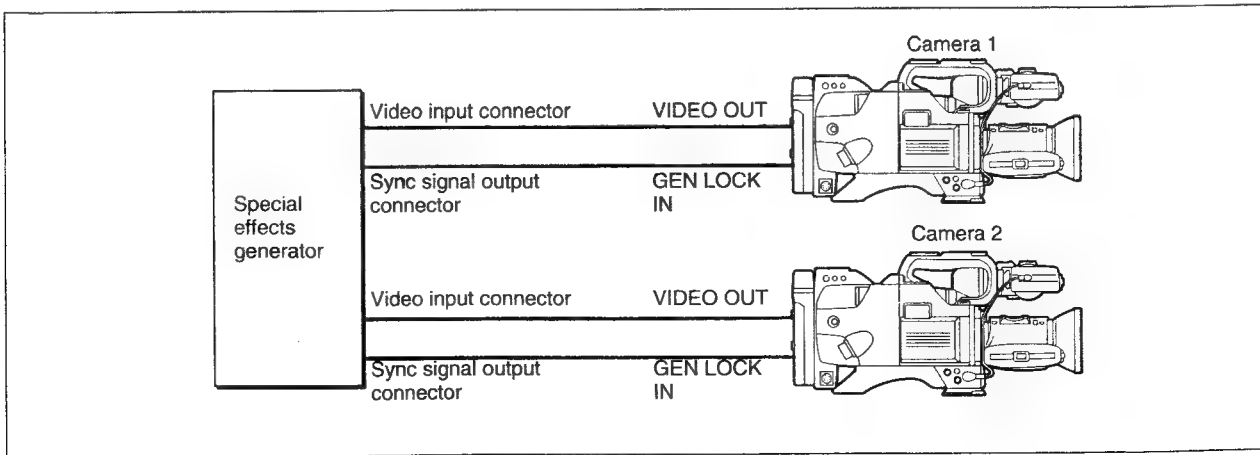
### Connecting two cameras or more cameras to a VTR

Camera 2 synchronizes with Camera 1.



### Connecting two or more cameras and a special-effects generator

Camera 1 and Camera 2 synchronize with a special-effects generator.



---

## Adjustment of the picture tone for two or more cameras

When two or more cameras are used simultaneously in connection with a special-effects generator, supply each camera with the same reference signal and adjust each camera to get the same picture tone. Adjust the SC (subcarrier) phase and the H (horizontal) phase following the procedures described below.

### Subcarrier phase adjustment

Adjust the subcarrier phase roughly with the SC PHASE selector, and make fine adjustment using the SC PHASE control. Use a vectorscope to make the adjustment easily.

### Horizontal phase adjustment

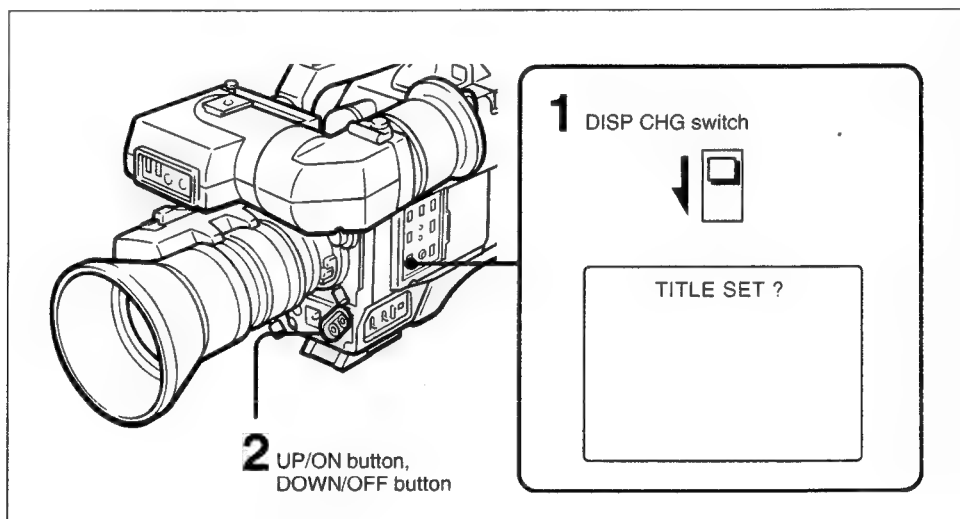
Adjust the horizontal phase with the H PHASE control. Use a waveform monitor or an oscilloscope to make the adjustment easily.

## Advanced Operations

### Title Characters Setting

This camera contains a built-in character generator that allows you to superimpose characters over the picture being shot. Both the picture and the superimposed characters appear on the monitor screen. If a recording VTR is connected to the camera, the superimposed characters can be recorded on the VTR.

#### Preparation



- 1** Press the DISP CHG switch several times until the above indication appears on the viewfinder display screen.
- 2** To put the camera into the title setting mode, press the UP/ON button.

#### To clear all the memorized characters

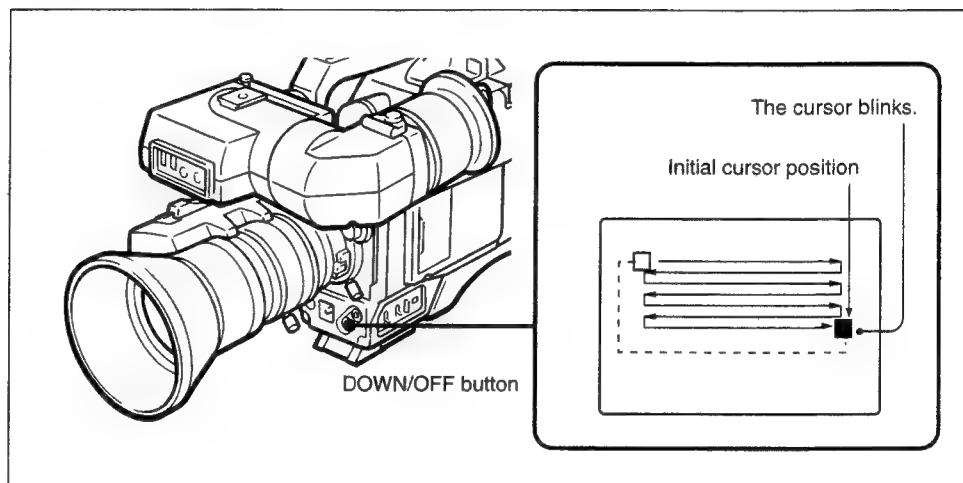
Press the UP/ON and DOWN/OFF buttons at the same time.



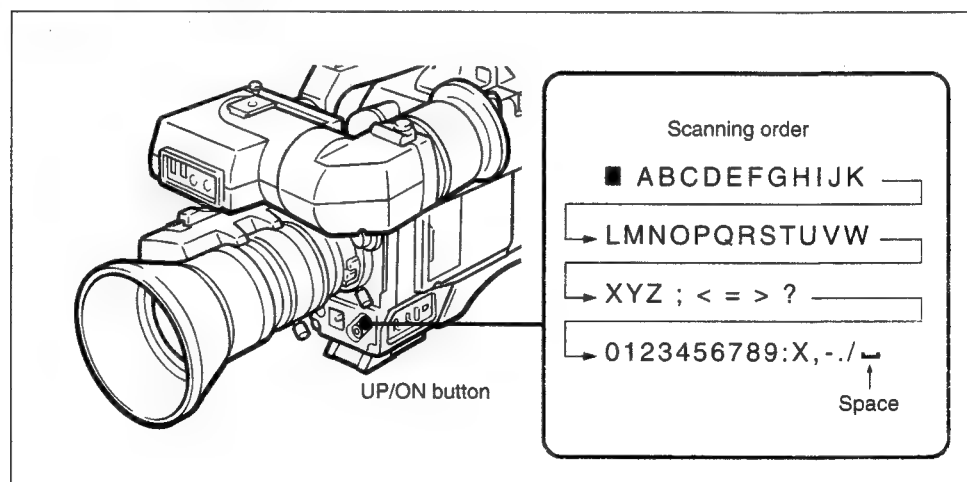
## Setting procedure

Set title characters one by one choosing them from the display using the UP/ON and DOWN/OFF buttons. Up to 12 characters can display on one line. Up to 4 lines can be displayed. Title characters, once set, remain in the memory of the camera, and are not erased when the power is turned off.

### Moving the cursor



### Setting title characters



- 1** To set characters and letters from the display, press the UP/ON button repeatedly until the cursor flashes on the character you want to set.  
**To change the characters in reverse alphabetical order**  
While pressing the UP/ON button, press the DOWN/OFF button.
- 2** Press the DOWN/OFF button to set the selected character.  
The cursor moves one space to the right.
- 3** Repeat the above steps 1 to 2 to set all the characters.

## Advanced Operations

### To replace a character

Return the cursor to the position of the character you want to replace, select the desired character with the UP/ON button, and press the DOWN/OFF button. The characters must be changed one by one as described in the above procedure.

### To move the cursor to the right

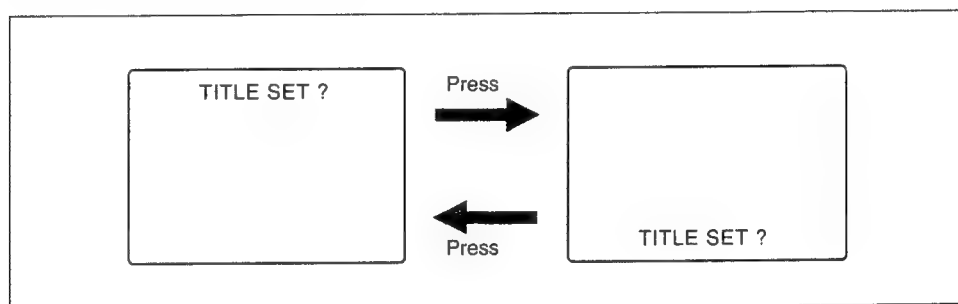
Press the DOWN/OFF button repeatedly.

### To move the cursor to the left

While pressing the UP/ON button, press the DOWN/OFF button repeatedly.

### To change the position of the title characters

Press the DOWN/OFF button



- If you are using a VO-8800/8800P portable VTR, do not use the upper character display area because the VTR tape remaining time shows here. Use only the lower character display area.

### To exit character setting mode

Press the DISP CHG switch.

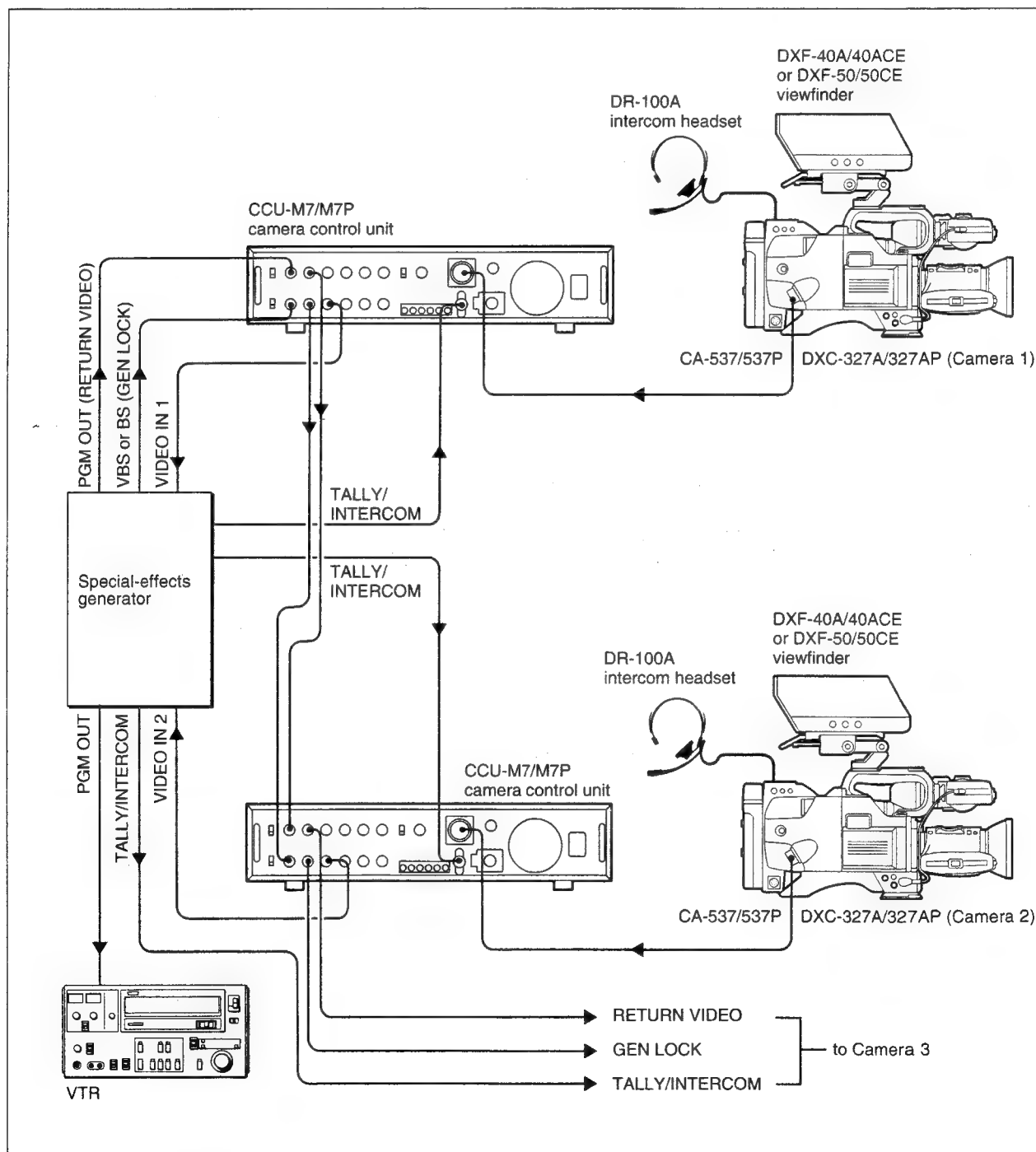
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## The next time you use the camera

When you turn on the camera, the memorized characters are displayed on the viewfinder screen at step 1 of "Preparation" (see page 1-72). To display the characters on the monitor screen and output them to the VTR, press the UP/ON button.

## Using the Camera in a Studio

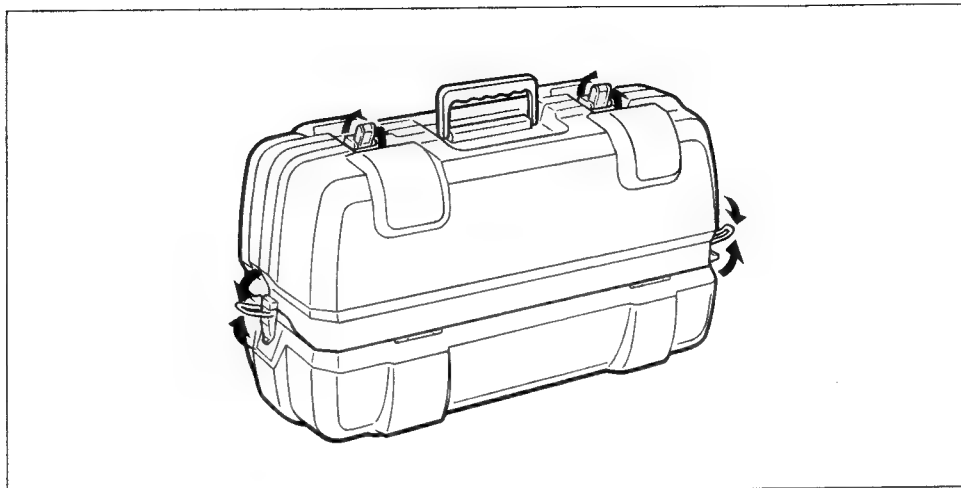
When you are using more than two cameras simultaneously in a video studio, you need a special-effects generator, such as the Sony SEG-2550, to do wipe effects and switching between equipment. You also need a CCU-M7/M7P Camera Control Unit to match picture quality and color between cameras (see "Connecting a Camera Control Unit" on page 1-34.)



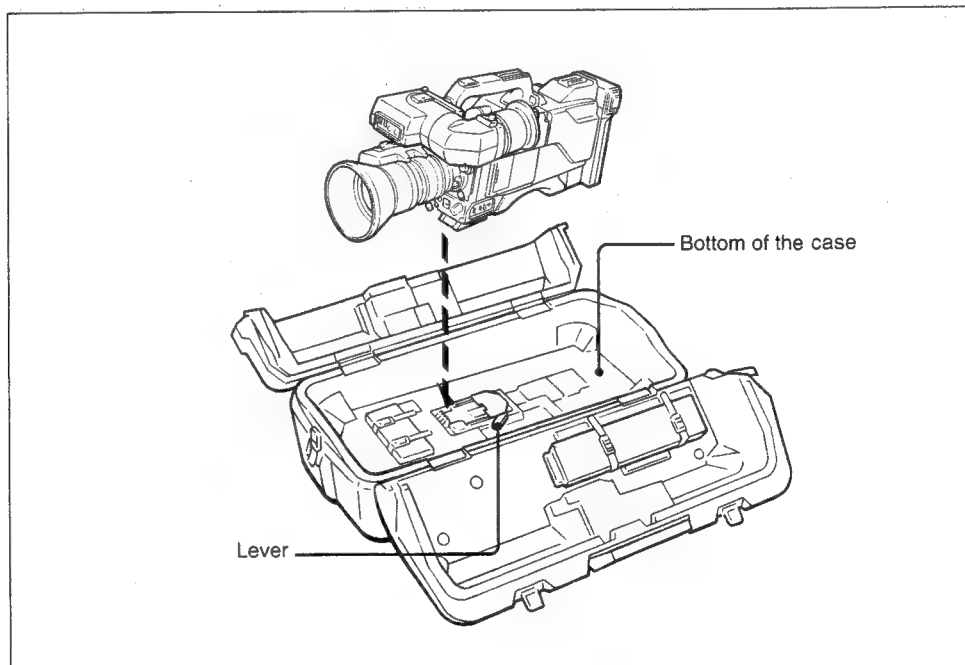
# Handling the Carrying Case

## Opening the carrying case

To open the camera carrying case, release the four catches at the edge of the case, then open the case from the upper part.



## Packing the camera in the case



- 1 Align the camera to the attachment on the bottom of the case.
- 2 Slide the camera forward and fasten the camera to the case by pulling the lever with the red button pressed.

### Note

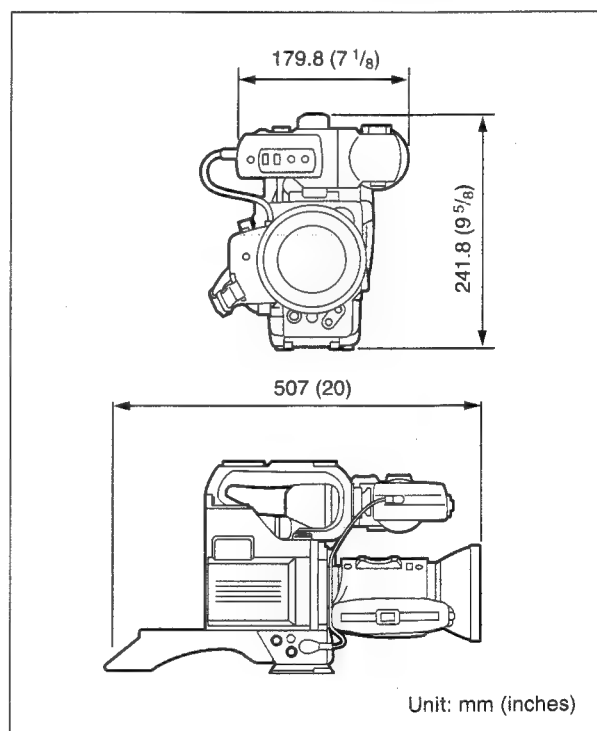
The camera cannot be packed in the carrying case with the VTR other than the EVV-9000/9000P attached to the camera head.

# Specifications

## Camera Head DXC-327A/327AP

Image device	Interline-transfer CCD, 3-chip
Effective picture elements	768 x 494 (h/v) (NTSC) 752 x 582 (h/v) (PAL)
Sensing area	6.4 mm x 4.8 mm (equivalent to a 1/2-inch pickup tube)
Built-in filters	1: 3200K 2: 5600K + 1/16 ND 3: 5600K
Lens mount	Bayonet mount
Signal system	EIA standards, NTSC color system (for DXC-327A) CCIR standards, PAL color system (for DXC-327AP)
Scanning system	525 lines, 2:1 interlace, 30 frames/sec.(NTSC) 625 lines, 2:1 interlace, 25 frames/sec. (PAL)
Scanning frequency	
Horizontal	15.734 kHz (NTSC) 15.625 kHz (PAL)
Vertical	59.94 Hz (NTSC) 50.00 Hz (PAL)
Sync system	Internal External with the BS or VBS signal supplied to the GEN LOCK IN connector (when the CA-537/ 537P, CA-327/327P is used) or the reference signal input to the VTR/CCU/CMA connector from the GEN LOCK connector of the CCU-M3/M3P/M7/M7P (when the CA-537/537P is used)
Horizontal resolution	700 lines (center)
Minimum illumination	7.5 lx with F1.4, +18 dB
Sensitivity	2000 lx with F8.0 (Typical) at 3200K
Gain selection	0 dB, 9 dB or 18 dB, selectable
Video output	
Composite signal	1.0 Vp-p, sync negative, 75 ohms, unbalanced
Y/C separate signal	Y: 1.0 Vp-p, sync negative, unbalanced C: burst level 0.286 Vp-p (NTSC) 0.3 Vp-p (PAL) without sync
Signal to noise ratio	62 dB (NTSC, Typical) 60 dB (PAL, Typical)
Registration	0.05% for Zone I 0.05% for Zone II 0.05% for Zone III

Inputs/Outputs	VIDEO OUT: BNC-type, 75 ohms, unbalanced LENS: 2/3-inch lens connector (6-pin) VF: 8-pin REMOTE: 10-pin
Power requirements	12 V DC
Power consumption	8 W
Operating temperature	-5°C to +45°C (23°F to 113°F)
Storage temperature	-20°C to +60°C (-4°F to 140°F)
Weight	about 2 kg (4 lb 6 oz)
Dimensions	See the illustrations below.



## Camera Adaptor CA-537/537P (Optional)

For details, refer to the CA-537/537P operating instructions.

Inputs/Outputs	VTR/CCU/CMA connector: Sony Z-type, 26-pin DC IN: XLR-type, 4-pin, male MIC IN: XLR-type, 3-pin, female GEN LOCK IN: BNC-type, 75-ohms, unbalanced EARPHONE: mini jack INTERCOM: mini intercom
Power requirements	12 V DC
Power consumption	1.7 W
Operating temperature	-10°C to +45°C (14°F to 113°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Weight	About 1.3 kg (2 lb 14 oz)
Dimensions	118 x 205 x 118 mm (w/h/d) (4 3/4 x 8 1/8 x 4 3/4 inches)

## Zoom Lens VCL-712BX

Focal length	7.5 mm to 90 mm
Zoom	Manual and motorized, selectable Zooming ratio: 12x
Maximum aperture ratio	1:1.4
Iris control	Manual and auto, selectable 1.4 to 16 and C (closed)
Range of object field (at the distance of 1.1 meter)	
W (wide angle)	660 x 880 mm (26 x 34 3/4 inches)
T (telephoto)	55 x 73 mm (2 1/4 x 3 inches)
Minimum object distance	1.1 m (3 3/4 inches)
Filter thread	72 mm dia., 0.75 mm-pitch
Mount	Bayonet mount, 2/3 inch
Weight	About 1.2 kg (2 lb 10 oz) with hood
Dimensions	About 110 mm dia. x 189 mm (4 3/8 x 7 1/2 inches)

## Viewfinder DXF-501/501CE

Picture tube	1.5-inch monochrome
Indicators	REC/TALLY indicator BATT indicator SHUTTER indicator GAIN UP indicator
Resolution	550 lines
Power requirements	12 V DC
Power consumption	2.3 W
Weight	About 500 g (1 lb 2 oz)
Dimensions	About 182 x 68 x 205 mm (w/h/d) (7 1/4 x 2 3/4 x 8 1/8 inches)

## Carrying Case LC-420

Weight	About 7.7 kg (17 lb)
Dimensions	About 790 x 440 x 340 mm (w/h/d) (31 1/8 x 17 3/8 x 13 1/2 inches)

## Accessories Supplied

VCL-712BX zoom lens (supplied with the DXC-327AK/327APK only) (1)  
DXF-501/501CE electronic viewfinder (supplied with the DXC-327AK/327APK/327AL/327APL only) (1)  
LC-420 carrying case (supplied with the DXC-327AK/327APK/327AL/327APL only) (1)  
VCT-12 tripod attachment (supplied with the DXC-327AK/327APK/327AL/327APL only) (1)  
Lens cap (1)  
Chart for flange focal length adjustment (1)

Design and specifications are subject to change without notice.

# Optional Accessories and Recommended Equipment

## Lens and Accessories

Zoom lens: VCL-712BX  
Lens remote control unit: LO-23  
Tripod attachment: VCT-12

## Camera Adaptor

Camera adaptor: CA-537/537P, CA-327/327P,  
CA-325A/325AP/325B,  
CA-511/512/513  
Camera adaptor: CMA-8A/8ACE  
Camera remote control unit: RM-M7G

## VTR

Betacam format video cassette recorder: PVV-1/1P  
Hi8 format video cassette recorder:  
EVV-9000/9000P  
Portable video cassette recorder: VO-8800/8800PS  
Betacam SP portable recorder: BVW-35/35P  
SP-Umatic video cassette recorder: BVU-150/150P

## Battery Pack and Charger

Battery pack: NP-1B, NP-1A  
Battery charger: BC-1WB, BC-1WA

## Microphone and Accessories

Condenser microphone: ECM-672, C-74  
Microphone holder: CAC-12  
Microphone cable: EC-0.5C2

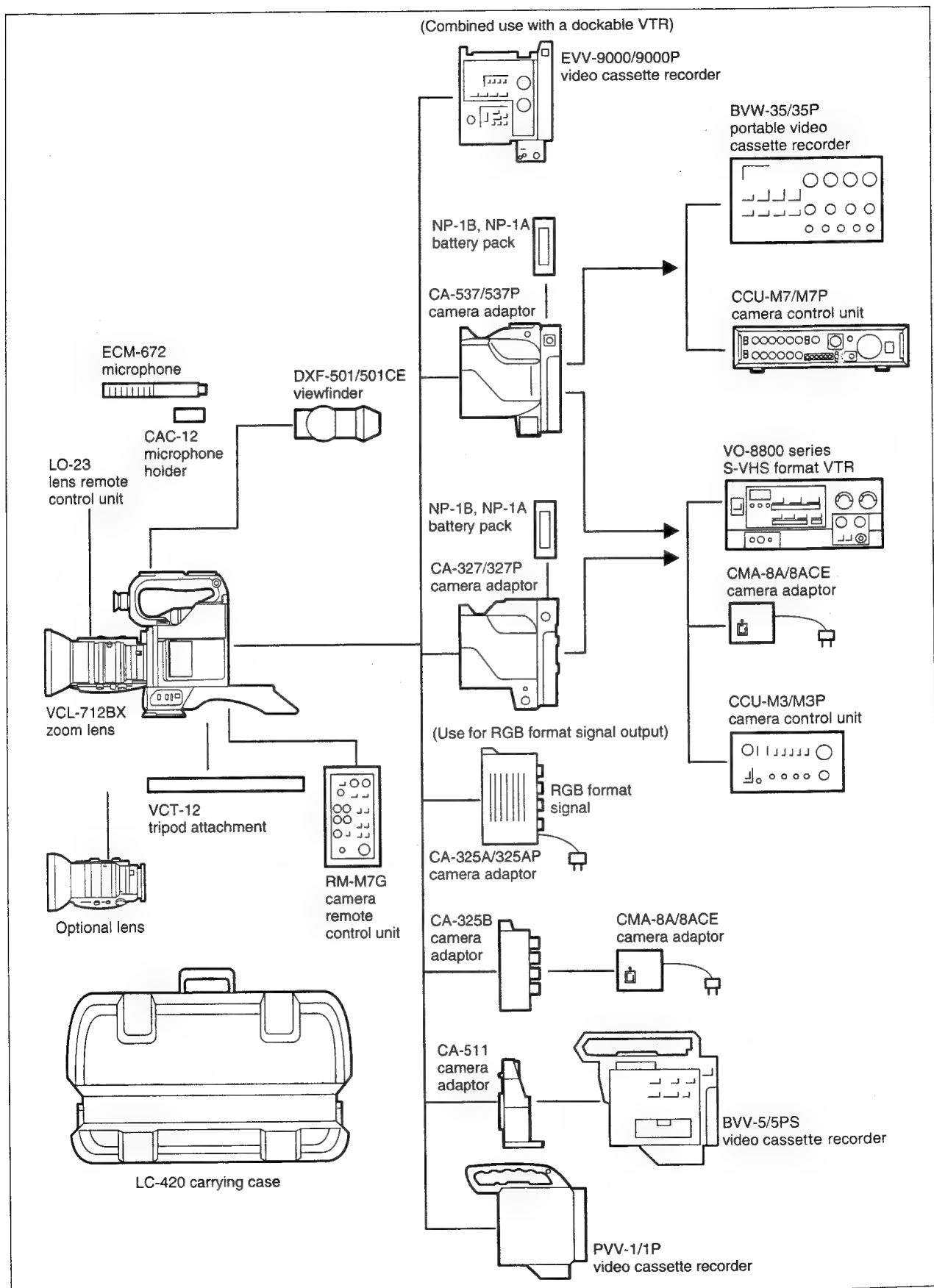
## Equipment for Studio Use

Camera control unit CCU-M7/M7P  
Camera control unit: CCU-M3/M3P  
Special-effects generator: SEG-2550/2550P  
Universal chroma keyer: CRK-2000  
Wipe pattern extender: WEX-2000/2000P  
Electronic viewfinder: DXF-50/50CE  
Electronic viewfinder: DXF-40A/40ACE  
Electronic viewfinder: DXF-501/501CE  
Intercom headset: DR-100A  
Rack mounting metal: RMM-1800

## Camera Cable and Others

Camera cable with Z-type 26 pin connectors:  
CCZ-A2, CCZ-A5, CCZ-A10  
CCZ-A25, CCZ-A50, CCZ-A100  
Camera cable with Z-type 26 pin and Q-type  
14 pin connectors: CCZQ-A2, CCZQ-A5,  
CCZQ-A10, CCZQ-A2AM  
Camera cable with Q-type 14-pin connectors:  
CCQ-2BRS, CCQ-5BRS, CCQ-10BRS  
Camera cable with Q-type 14-pin connectors:  
CCQ-10AM, CCQ-25AM, CCQ-50AM,  
CCQ-100AM  
Camera cable with Z-type 26-pin and J-type  
10-pin connectors: CCZJ-2  
Cable extension adaptor: CCZZ-1B, CCZZ-1E  
Carrying case: LC-420  
Camera rain cover: LCR-1

# Sample Video System Configuration

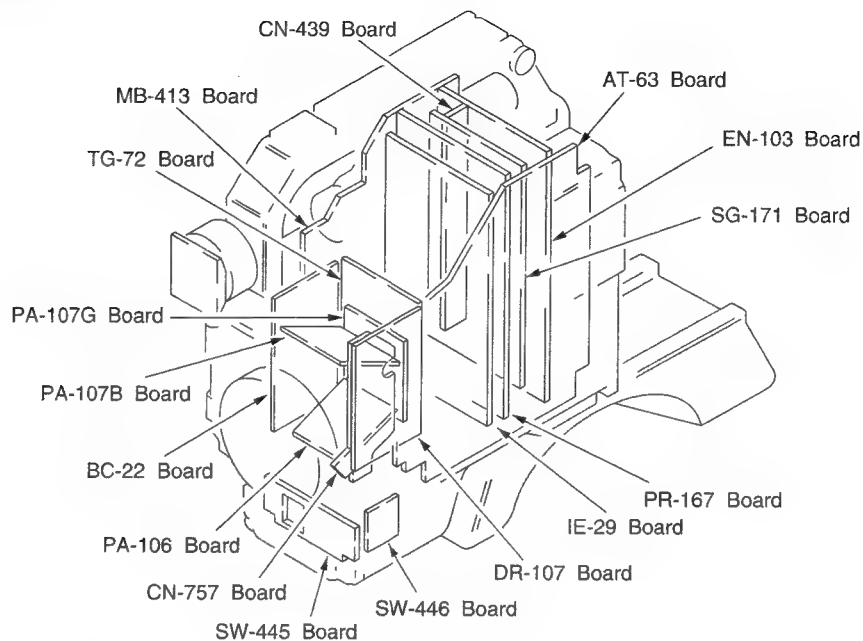




## SECTION 2

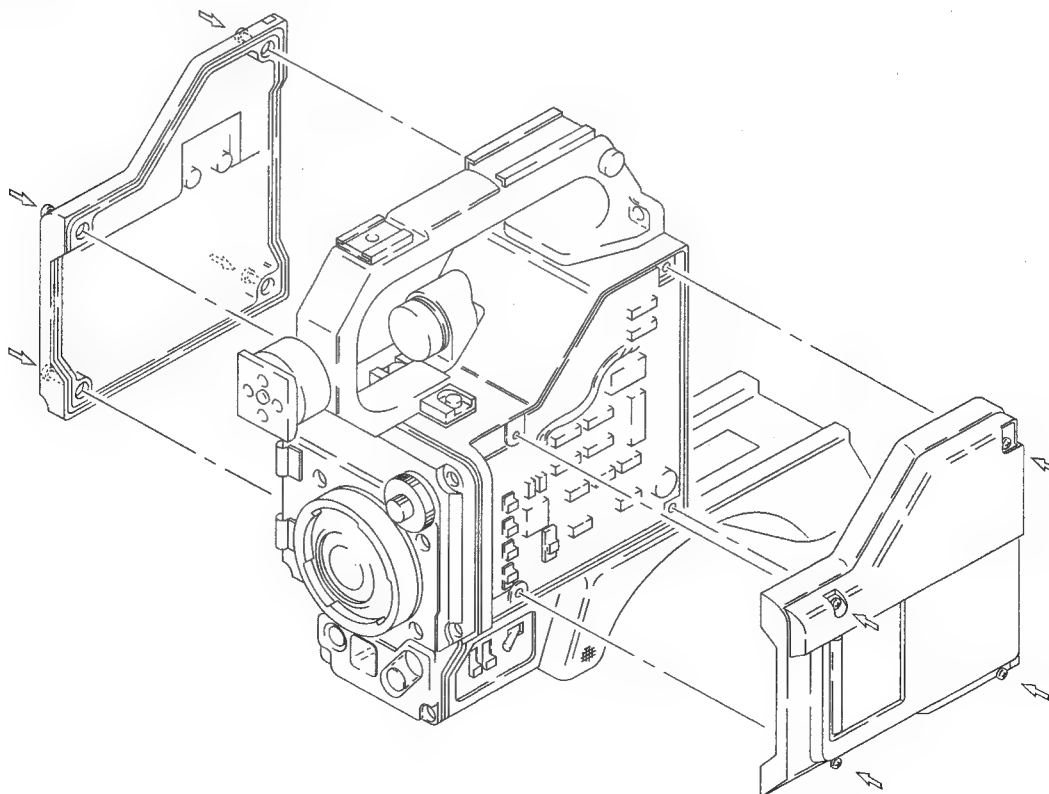
### SERVICE INFORMATION

#### 2-1. BOARD LAYOUT



#### 2-2. REMOVAL OF CABINET

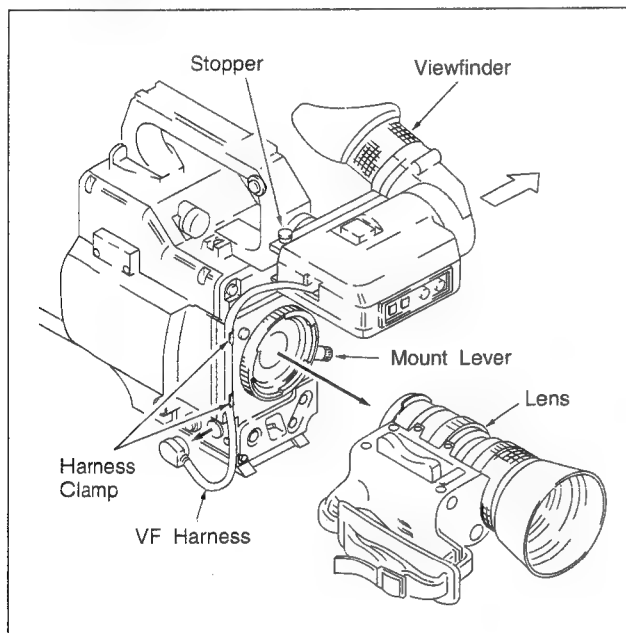
Loosen the four screws to remove each side cover.



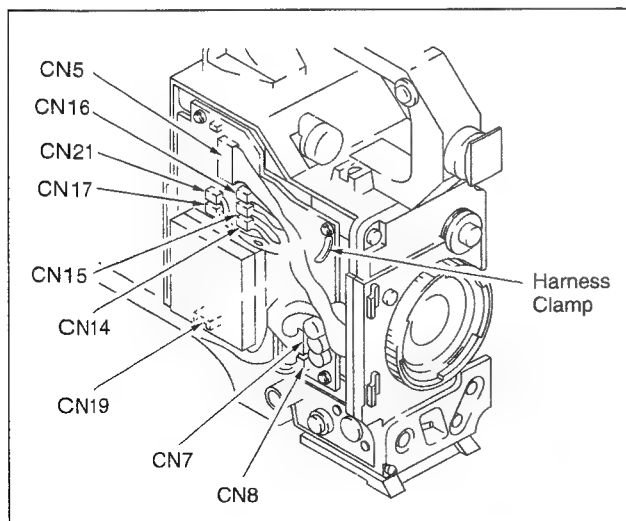
## 2-3. REPLACEMENT OF MAIN PARTS

### 2-3-1. Replacement of CCD Unit

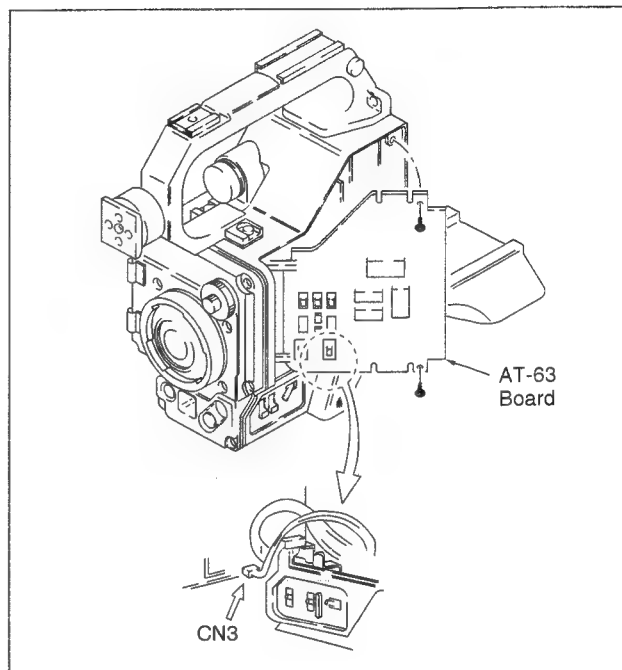
1. Turn the mount lever counterclockwise and remove the lens. Release the VF harness from the harness clamp. Pull the viewfinder in the direction of arrow, pulling the stopper of viewfinder. The viewfinder will be removed.



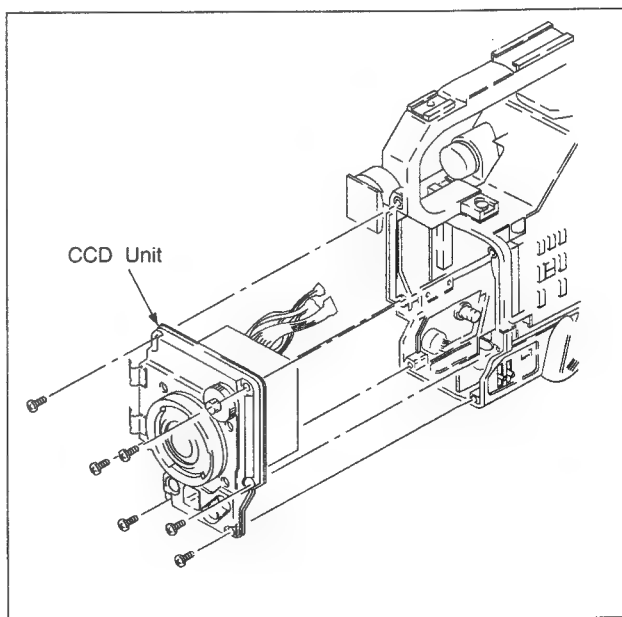
2. Remove the right and left side panels, referring to Section 2-2 "REMOVAL OF CABINET".
3. Disconnect the eight connectors CN5, CN7, CN8, CN14, CN15, CN16, CN19 and CN21 on the MB-413 board. Release the harness from the harness clamp.



4. Remove the two screws shown in the figure and open the AT-63 board. Disconnect the connector CN3.



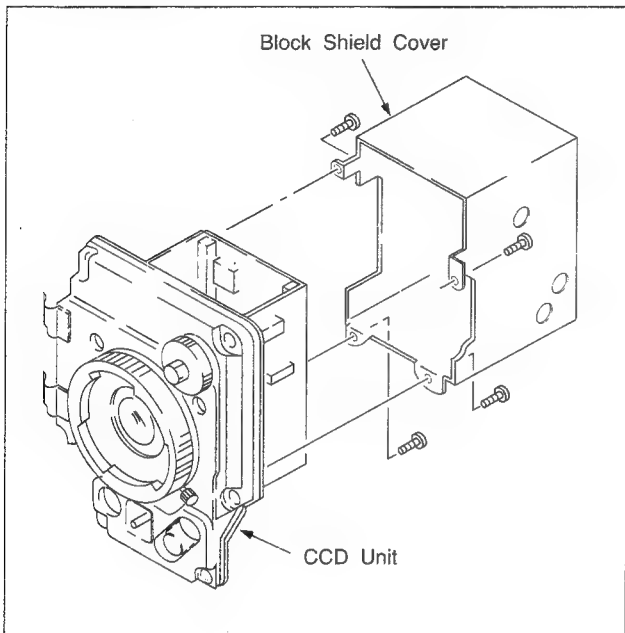
5. Remove the six screws securing the front panel. Pull out the CCD unit.



6. Install a new CCD unit by reversing procedures above.

## 2-3-2. Replacement of TG-72, DR-107 and CN-432 Boards

1. Remove the CCD unit, referring to Steps 1 to 5 in Section 2-3-1. "Replacement of CCD Unit".
2. Remove the four screws and remove the block shielding cover.



3. Remove the two couples of screws fixing the BC-22 and DR-107 boards respectively, and extend the BC-22, TG-72 and DR-107 boards as illustrated. Do not extend the angles in the connection of each board at more than 90 degrees, or the elbow connector may be damaged.

\* Two kinds of elbow connector are used between boards.

Front-to-front type connector

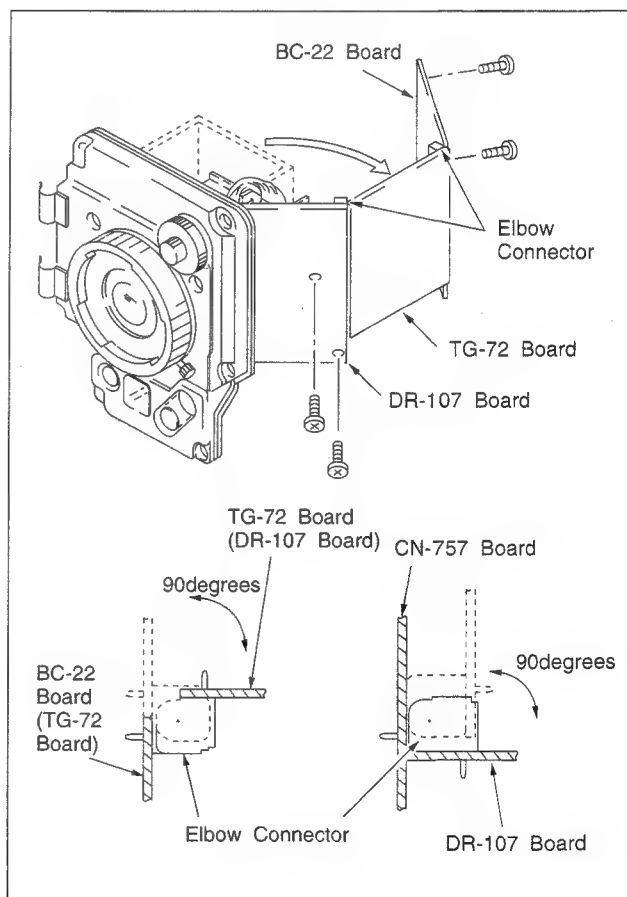
BC-22 board ↔ TG-72 board

TG-72 board ↔ DR-107 board

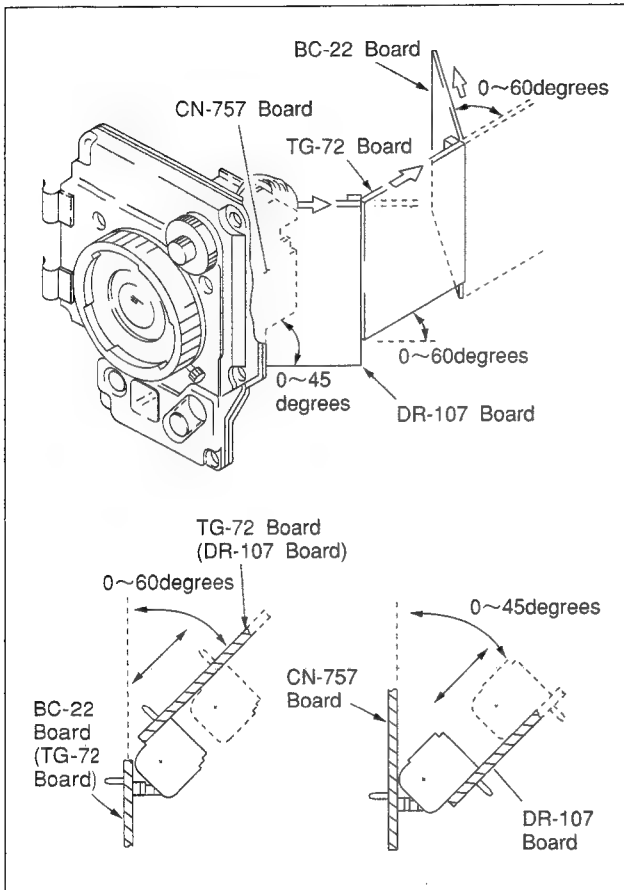
Back-to front type connector

DR-107 board ↔ CN-757 board

PR-148 board ↔ IE-29 board

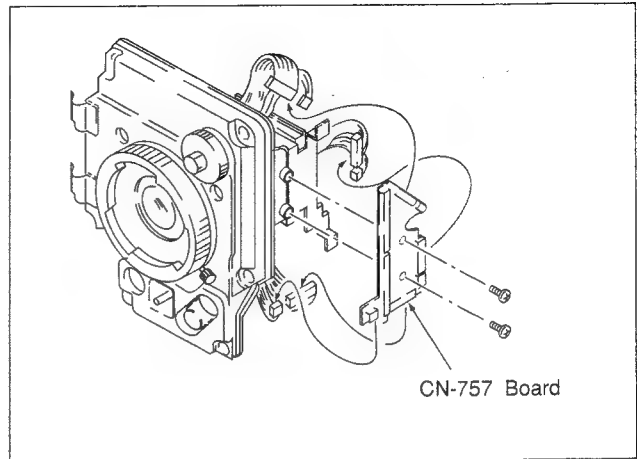


4. Remove the TG-72 and DR-107 boards. Remove and install each board extending the angles within the degrees shown in the illustration, or the elbow connectors may be damaged.



5. Replace the TG-72 or DR-107 board. Assemble the boards by reversing procedures above. If the CN-757 board is to be replaced, perform Step 6 and later.

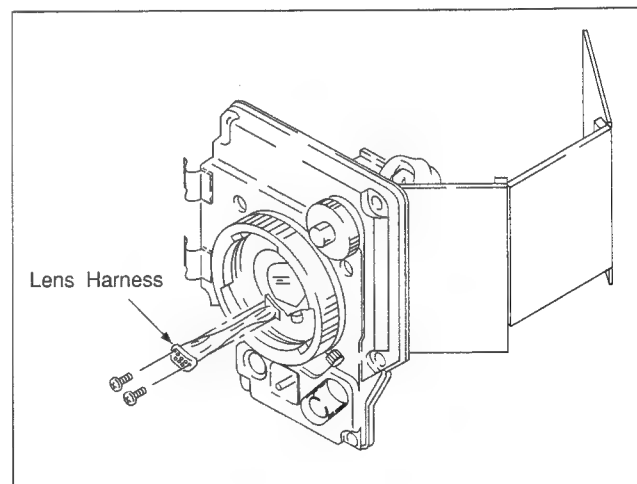
6. Disconnect the six connectors CN3, CN4, CN5, CN6, CN7 and CN8 on the CN-757 board. Remove the two screws and remove the CN-757 board.



7. Install a new board and reassemble the boards by reversing procedures above.

### 2-3-3. Replacement of Lens Harness

1. Release the boards as illustrated referring to Steps 1 to 3 in Section 2-3-2.
2. Remove the two screws and pull out the lens harness.



3. Install a new harness by reversing procedures above.

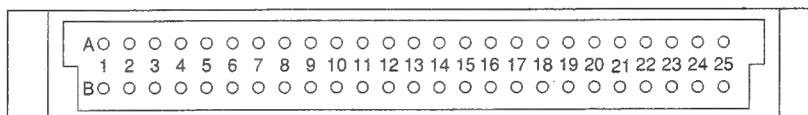
## 2-4. CONNECTORS AND CABLES

### 2-4-1. Connector Input/Output Signals

The main connector input/output signals are as follows:

**VIDEO OUT (BNC):** 1.0 V p-p±0.1 V, sync negative 75Ω

**CAMERA/CA (50P)**



(EXT VIEW)

Pin No.	Signal	Specification
A1	MODE ID	OPEN: COMP, GND: R/G/B
B1	GND (CHASSIS)	
A2	MIC (Y) OUT	-60 dBm
B2	MIC (X) OUT	
A3	MIC (G) OUT	
B3	(SPARE)	
A4	REC TALLY IND IN	$Z_i \geq 600 \Omega$
B4	(SPARE)	
A5	VTR START/STOP OUT	
B5	(SPARE)	
A6	(SPARE)	
B6	(SPARE)	
A7	(SPARE)	
B7	(SPARE)	
A8	GENLOCK VIDEO (G) IN	$Z_i \geq 1 k\Omega$
B8	GENLOCK VIDEO (X) IN	
A9	SYNC (G) OUT	H : 4.0~5.5 V p-p : negative L : $0 \pm 0.4$ V dc $Z_o \leq 2 k\Omega$
B9	SYNC (X) OUT	
A10	PB RET VIDEO (G) IN	$Z_i \leq 10 k\Omega$
B10	PB RET VIDEO (X) IN	
A11	COLOR FRAMING PULSE	H : 4.0~5.5 V p-p L : $0 \pm 0.4$ V dc $Z_o \leq 2 k\Omega$
B11	VF VIDEO CONT IN	CAM: OPEN $Z_i \geq 1 k\Omega$ , PB: 0 V
A12	VBS (G) OUT	1.0 V p-p, negative sync $Z_o = 75 \Omega \pm 5\%$
B12	VBS (X) OUT	
A13	VTR SAVE CONT OUT	STBY: 4.0~5.5 V p-p SAVE: $0 \pm 0.25$ V $Z_o \leq 100 \Omega$
B13	VTR/CCU CONT OUT	VTR : $0 \pm 0.25$ V CCU : $5.0 \pm 0.5$ V $Z_o \leq 1 k\Omega$

Pin No.	Signal	Specification
A14	CHROMINANCE (G) OUT	NTSC: 0.286 V p-p±10% PAL: 0.300 V p-p±10% $Z_o \leq 75 \Omega \pm 5\%$
B14	CHROMINANCE (X) OUT	
A15	LUMINANCE (G) OUT	1.0 V p-p, negative sync. $Z_o \leq 75 \Omega \pm 5\%$
B15	LUMINANCE (X) OUT	
A16	VIDEO GND OUT	R/G/B 1.4 V p-p, positive $Z_o \leq 75 \Omega \pm 5\%$ component out *1
B16	R/R-Y VIDEO OUT	
A17	G/Y VIDEO OUT	
B17	B/B-Y VIDEO OUT	
A18	BATT ALARM/S. DATA	
B18	REC REVIEW CONT OUT	GND; rec review
A19	(SPARE)	
B19	(SPARE)	
A20	+8.5 V OUT	8.3 V~9.1 V
B20	+5 V OUT	±0.1 V
A21	-5 V OUT	±0.1 V
B21	GND	REG, GND
A22	POWER +12 V DC IN	10.6 V to 17.0 V dc
B22	POWER +12 V DC IN	
A23	POWER +12 V DC GND	GND for +12 V dc
B23	POWER +12 V DC GND	
A24	(SPARE)	
B24	(SPARE)	
A25	GND (CHASSIS)	CHASSIS GND
B25	GND (CHASSIS)	

\*1

	J	UC	EK
Y	0.714 V p-p	0.714 V p-p	0.700 V p-p
R-Y	0.756 V p-p	0.700 V p-p	0.525 V p-p
B-Y	0.756 V p-p	0.700 V p-p	0.525 V p-p

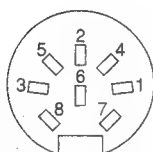
# REMOTE (10P, FEMALE)



(EXT VIEW)

Pin No.	Signal	Specification
1	(SPARE)	
2	VBS (RM) (X)	1.0 Vp-p, sync negative
3	VBS (RM) (G)	
4	(SPARE)	
5	VTR START/STOP IN	$Z_i \geq 10 \text{ k}\Omega$  -OPEN -0±0.5 V
6	S. DATA (X)	0 to 5 V $Z_i \geq 10 \text{ k}\Omega$
7	S. DATA GND	GND for S. DATA
8	REC TALLY IND OUT	
9	POWER +12 V DC GND	GND for +12 V dc
10	POWER +12 V DC OUT	10.6 V to 17.0 V dc, 3A

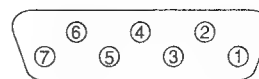
# VF (8P, FEMALE)



(WIRING SIDE)

Pin No.	Signal	Specification
1	POWER +12 V DC GND	GND for +12 V dc
2	REC TALLY IND OUT	$Z_o \leq 1.1 \text{ k}\Omega$
3	E. SHUTTER IND OUT	$Z_o \leq 1.1 \text{ k}\Omega$
4	VF VIDEO (G) OUT	GND for VF VIDEO
5	BATT IND OUT	$Z_o \leq 1.1 \text{ k}\Omega$
6	VF VIDEO (X) OUT	V=1 V p-p
7	POWER +12 V DC OUT	10.6 V to 17 V dc, 3A
8	GAIN UP IND OUT	$Z_o \leq 1.1 \text{ k}\Omega$

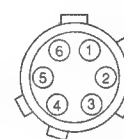
# LENS (7P)



(WIRING SIDE)

Pin No.	Signal	Specification
1	VF VIDEO CONT IN	ON: 0±5 V dc
2	VTR START/STOP IN	TRIG: 0±0.5 V
3	POWER +12 V DC GND	GND for +12 V dc
4	COMPULSORY AUTO IRIS CONT OUT	5±0.5 V dc
5	IRIS CONT OUT	F16: 3.4 V dc F2.8: 6.2 V dc
6	POWER +12 V DC OUT	10.6 V to 17 V dc, 3A
7	(SPARE)	

# OPTION (6P, FEMALE)



(WIRING SIDE)

Pin No.	Signal	Specification
1	VF VIDEO CONT IN	ON: 0±0.5 V dc
2	VTR START/STOP IN	TRIG: 0±0.5 V
3	POWER +12 V DC GND	GND for +12 V dc
4	COMPULSORY AUTO IRIS CONT OUT	5±0.5 V dc
5	IRIS CONT OUT	F16: 3.4 V dc F2.8: 6.2 V dc
6	POWER +12 V DC OUT	10.6 V to 17 V dc, 3A

## 2-4-2. Connections

Connections made with the connector panels during installation or service, should be made with the connectors or complete cable assemblies specified in the following list, or equivalent parts.

Connector function	Pars No. and name of connector with cable
REMOTE (10P, FEMALE)	1-506-522-11 CONNECTOR, ROUND 10P, MALE HIROSE HR10A-10P-10P equality or CCA-7-20 Cable assembly (optional)
VIDEO OUT (BNC)	1-560-069-11 PLUG, BNC or B-B cable assembly (Cable length 1.5 m, optional)
VF (8P, FEMALE)	9-994-797-01 CABLE, VF
OPTION (6P, FEMALE)	1-560-078-00 CONNECTOR, 6P MALE HIROSE HR10-7PA-6P (3) equality 1-560-078-21 CONNECTOR, 6P MALE HIROSE HR10-7PA-6P equality 1-566-365-11 CONNECTOR, 6P MALE HIROSE HR10A-7P-6P (01) equality 1-566-365-21 CONNECTOR, 6P MALE HIROSE HR10A-7P-6P (02) equality





## AT-63 board

### •S1 (SHUTTER)

For details on the switch, refer to the DXC-327A /327AP instruction manual.

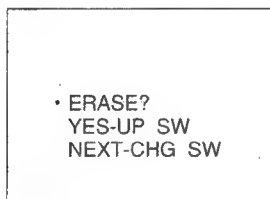
### •S2 (ADJ/OPE) \*1

When set to 「ADJ」 position, setting values of R GAIN, B GAIN, R PED, B PED, M PED, R DARK, B DARK, and G DARK that are stored in the microcomputer, are all reset to the preset value. Set it to 「ADJ」 position for adjustment.

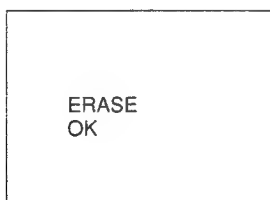
\* 1 Using the switch S2 (ADJ/OPE), data in memory "EEPROM" can be erased. Proceed as follows.

#### Procedures

- ① Set the switch S2 (ADJ/OPE) to 「ADJ」 position.
- ② Press the DSP CHG button twice.
- ③ Make sure the following indication appears on the viewfinder screen.



- ④ Press the UP/ON button on the front panel.
- ⑤ Make sure the following indication appears on the viewfinder screen.



(The display returns to normal display in about three seconds.)

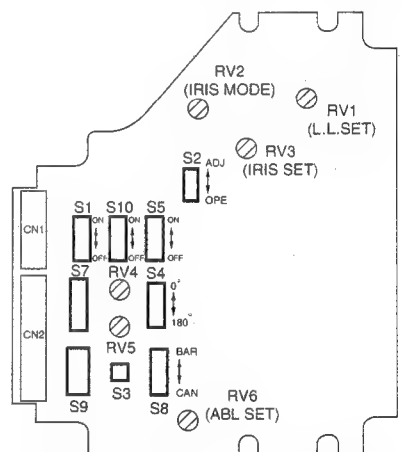
- ⑥ Reset the switch S2 (ADJ/OPE) to 「OPE」 position.

As mentioned above, memorized setting values are all reset to the preset value shown in the table. Ordinarily, you do not need to erase the memory.

ITEM	PRESET STATE
SHUTTER SPEED	1/100 (NTSC), 1/60 (PAL)
C. SCAN	Minimum Value
AUTO WHT/AUTO BLK	Adjusted Value is preset
A. IRIS/DTL/M. PED	Setting Value is preset
TITLE CHARACTERS	All erased

- S3 (REC REVIEW)
- S4 (SC 0/180)
- S5 (ZEBRA)
- S7 (ZONE/MARKER)
- S8 (BARS)
- S9 (DISP)
- S10 (ABL)

For details on the switches, refer to the DXC-327A /327AP instruction manual.



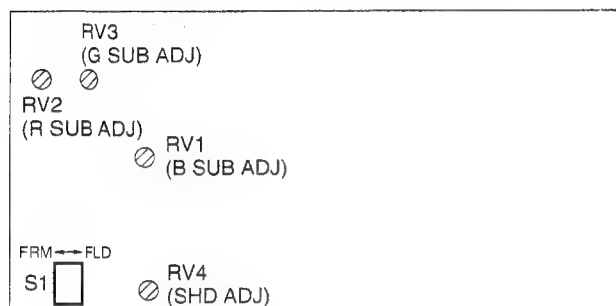
AT-63 BOARD (COMPONENT SIDE)

**DR-107 board**

## •S1 (FLD/FRM)

A CCD read system can be selected to a field system (FLD) or frame system (FRM).

The switch is factory-set to 「FLD」 position.

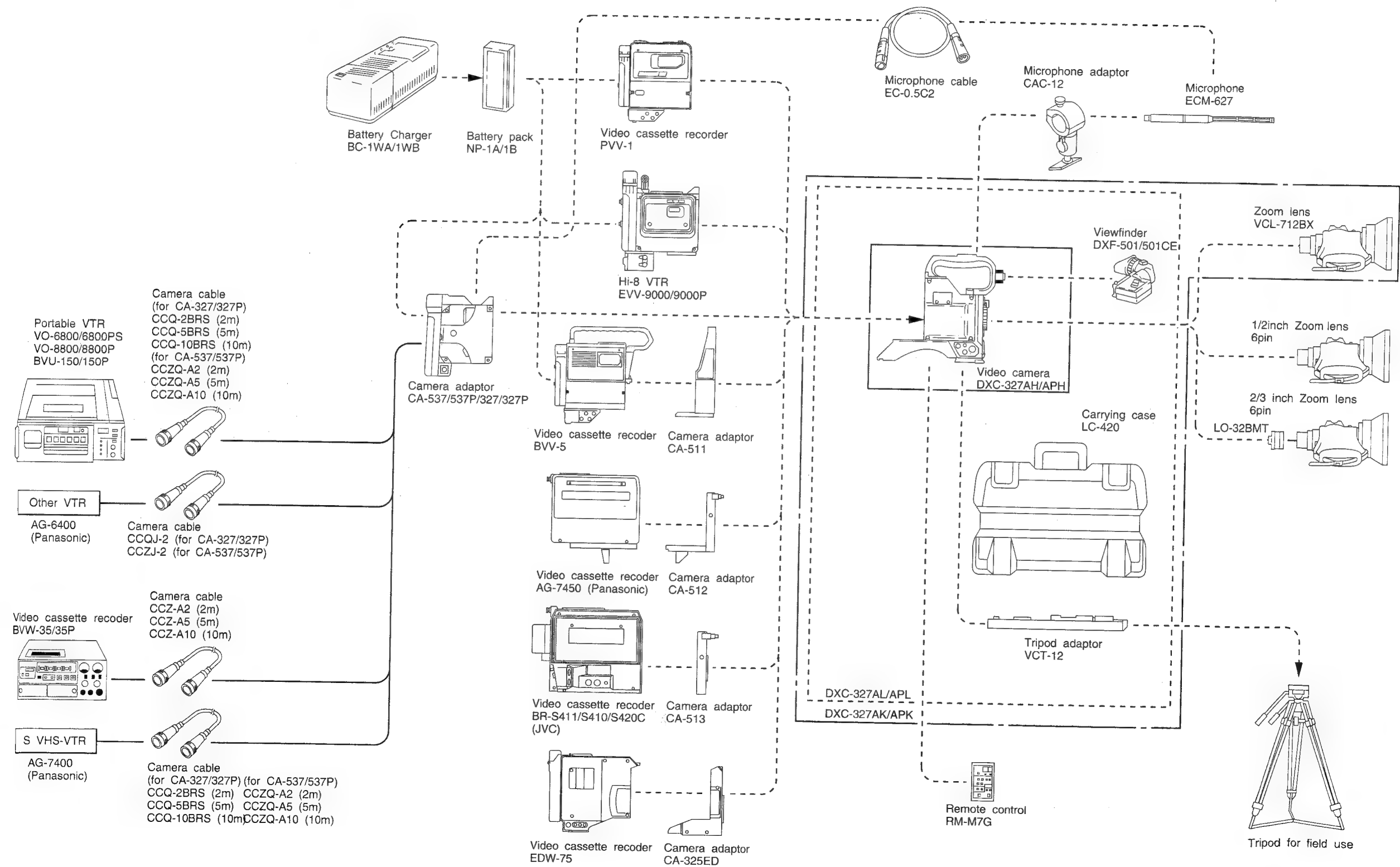


DR-107 BOARD (COMPONENT SIDE)

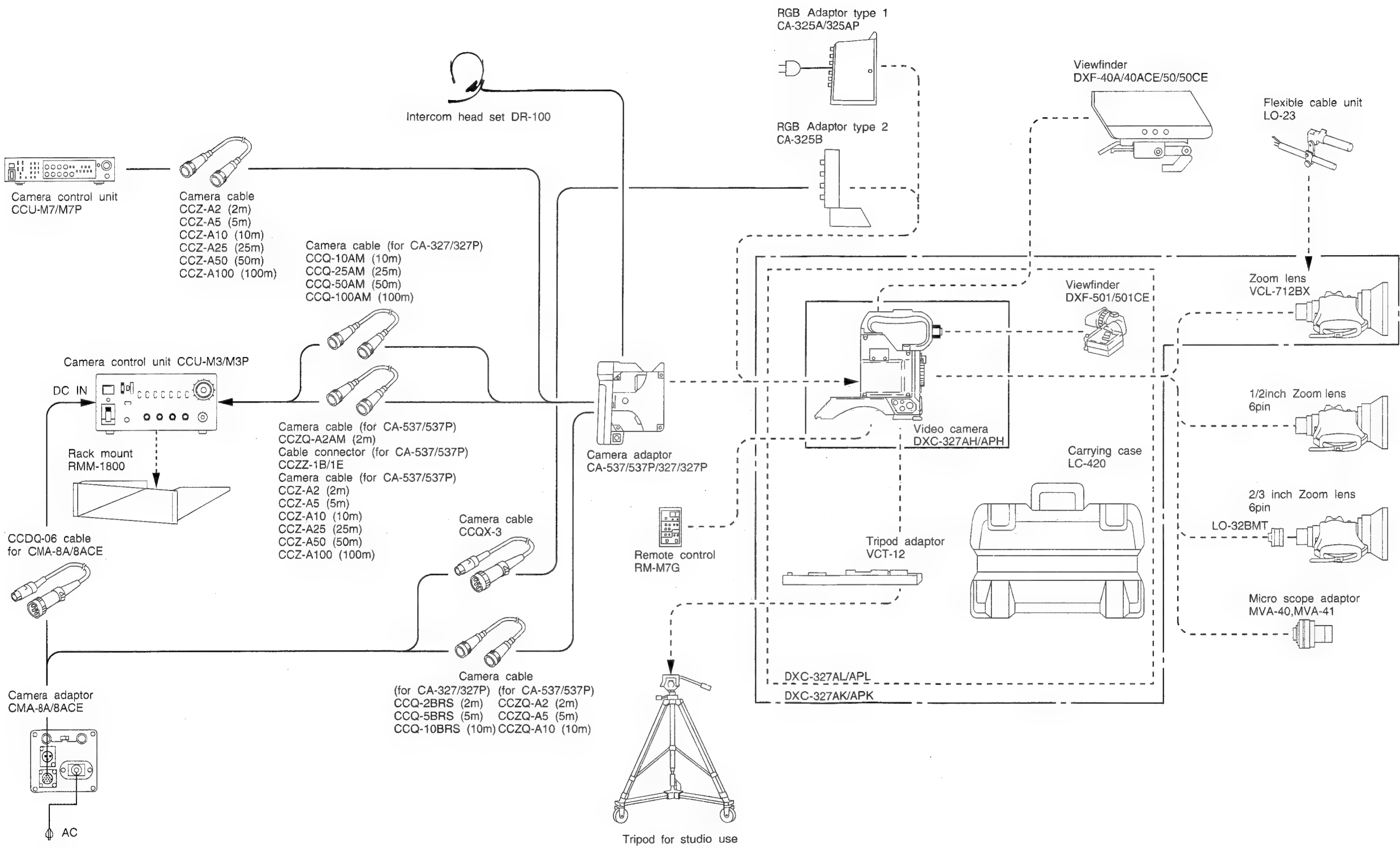
2-6. SYSTEM BLOCK DIAGRAM

The configuration of DXC-327A/327AP system and the block diagram of separate accessories for sale (peripheral devices) are shown.

2-6-1. Field Use

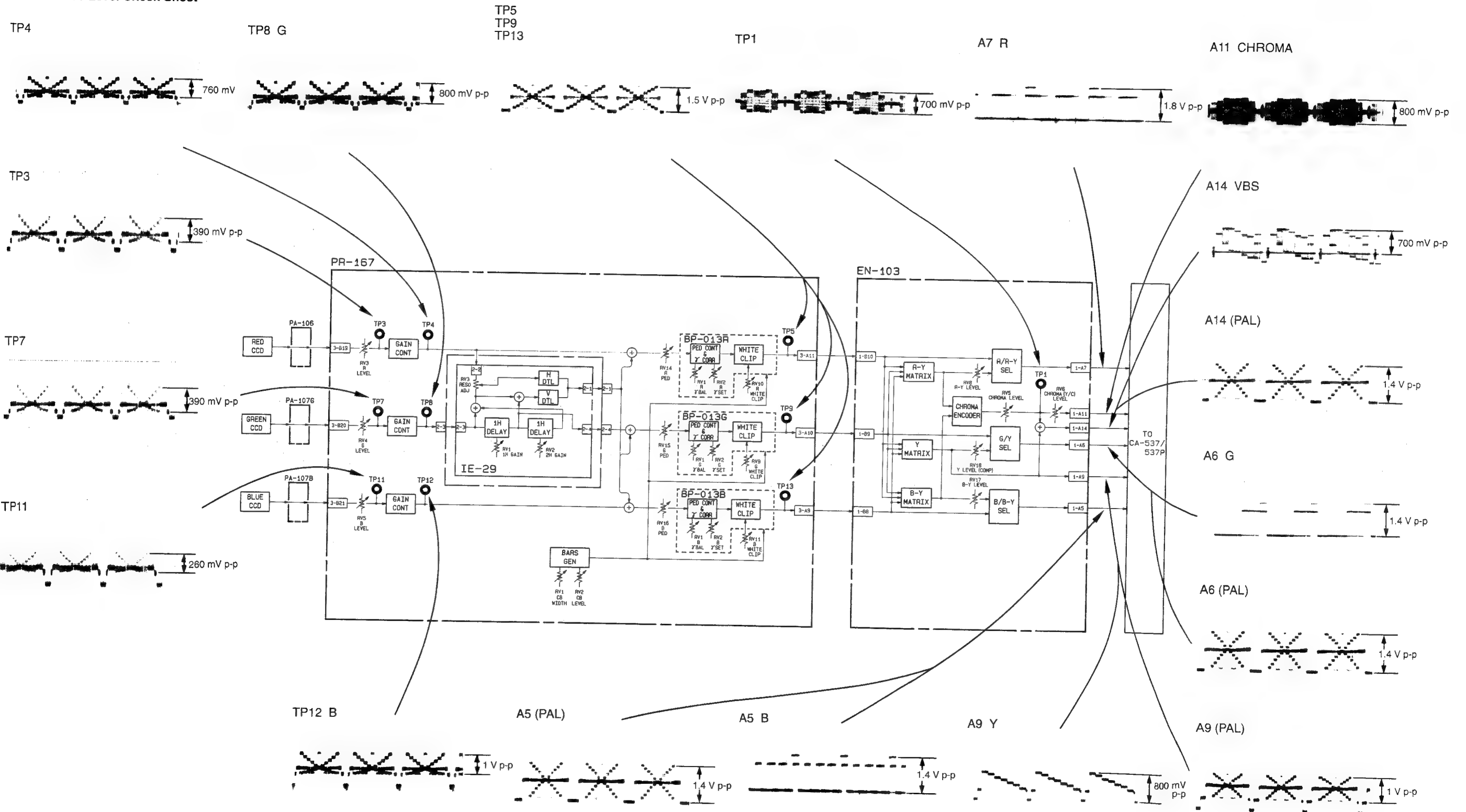


2-6-2. Studio/OB Van Use



## 2-7. CHECK AND MAINTENANCE

### 2-7-1. Video Level Check Sheet



	Item	Switch setting	Measuring point	Adjustment point	Spec.	Remark
Step 1	BARS Level	GAIN switch → 0 dB BARS switch → ON	A6 pin/EX-board (EN-103)	RV15/EN-103 board	1.4±0.02 V p-p	Use the Vectorscope for set-up 0
			WFM	RV13/EN-103 board RV14/EN-103 board	Minimize the carrier leakage → Gray	
Step 2	Carrier Balance		Vector scope	RV1/EN-103 board RV4/EN-103 board	White beam spot → center	
Step 3	Burst Level			RV7/EN-103 board	Burst spot 75%	
Step 4	Color Vector			RV2, RV5 LV1/EN-103 board	Beam spots of each color → Inside the  mark	
Step 5	SYNC Level		WFM	RV10/EN-103 board	40±2 IRE (300±15 mV)	
Step 6	SET UP Level			RV9/EN-103 board	7.5±0.5 IRE (0±10 mV)	
Step 7	Y Level			RV11/EN-103 board	100±2 IRE (700±15 mV)	
Step 8	COMP Y Level	GAIN switch → 0 dB BARS switch → ON	A6 pin/EX-board (EN-103)	RV18/EN-103 board	Y Level: 714 mV (700 mV)	
Step 9	COMP Y Limit	GAIN switch → 18 dB BARS switch → OFF Lens Iris → Open	A6 pin/EX-board (EN-103)	RV19/EN-103 board	Adjust RV19 so that Level dose not change when turned either fully clockwise.	
Step 10	COMP B-Y Level		A5 pin/EX-board (EN-103)	RV17/EN-103 board	700±10 mV p-p (525 mV)	
Step 11	COMP R-Y Level	GAIN switch → 0 dB	A7 pin/EX-board (EN-103)	RV8/EN-103 board	700±10 mV p-p (525 mV)	
Step 12	Y/C Y Level	BARS switch → ON	A9 pin/EX-board (EN-103)	RV12/EN-103 board	Y Level: 714 mV (700 mV)	
Step 13	Y/C Chroma Level		A11 pin/EX-board (EN-103)	RV6/EN-103 board	Burst Level: 286 mV (300 mV)	
Step 14	H/V Shading	Object: White Window Chart GAIN switch → 0 dB WHITE BAL switch → PRE SET Lens Iris → F = 11	TP4/PR-167 TP8/PR-167 TP12/PR-167	RV20/PR-167 RV17/PR-167 RV21/PR-167 RV18/PR-167 RV22/PR-167 RV19/PR-167	Waveform → flat	Lens Iris F = 8
Step 15	G Level		TP8/PR-167	RV4/PR-167	680±10 mV	
Step 16	1 H GAIN Level	VTR switch/CA-327 → 1 WB switch → PRE	TP1 (E1)/IE-29 TP8 (E1)/PR-167	RV1/IE-29	Ch1 + (INV. Ch2) → Flat	
Step 17	PRE B Level		TP11/PR-167	RV5/PR-167	180±5 mV	
Step 18	PRE B Gain		TP12/PR-167	RV13/PR-167	680±10 mV	
Step 19	PRE R Level		TP3/PR-167	RV3/PR-167	340±5 mV	
Step 20	PRE R Gain		TP4/PR-167	RV12/PR-167	680±10 mV	
Step 21	G Black Set	Lens Iris → Close DTL/IE-29 → OFF	TP9/PR-167	RV7/PR-167	Equal pedestal of 0 dB and it of 18 dB	Note 3
Step 22	G Pedestal	Lens Iris → Close GAIN switch → 0 dB		RV15/PR-167	40±5 mV	
Step 23	R/B Black Set	Lens Iris → Close GAIN switch → 18 dB	Vector scope	RV6/PR-167 RV8/PR-167	White beam spot → center	
Step 24	R/B Pedestal	Lens Iris → Close GAIN switch → 0 dB		RV14/PR-167 RV16/PR-167		

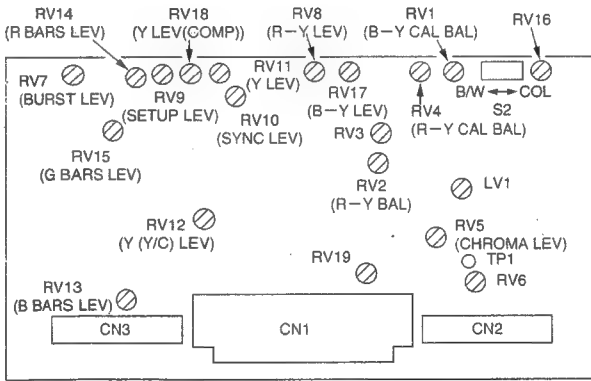
	Item	Switch setting	Measuring point	Adjustment point	Spec.	Remark
Step 25	Reference G input Level		WFM	Lens Iris	100±2 IRE (700±15 mV)	Lens Iris F = 8
Step 26	G Gamma Balance		TP9/PR-167	RV1/BP-013G	Note 1	
Step 27	G Gamma Set			RV2/BP-013G	900±10 mV	
Step 28	R Gamma Balance			RV1/BP-013R	Note 1	
Step 29	B Gamma Balance		TP11/PR-167	RV1/BP-013B	Note 1	
Step 30	R/B Gamma Set and PRE Set		Vector scope WFM	RV12/PR-167 RV13/PR-167 RV2/BP-013R RV2/BP-013B	White beam spot → Center Note 2	
Step 31	R/B White Clip	Lens → Open	WFM	RV10/EN-167 RV11/EN-167	Carrier of white portion is minimized	
Step 32	G White Clip			RV9/PR-167	115±2 IRE (800±15 mV)	

( ) : PAL

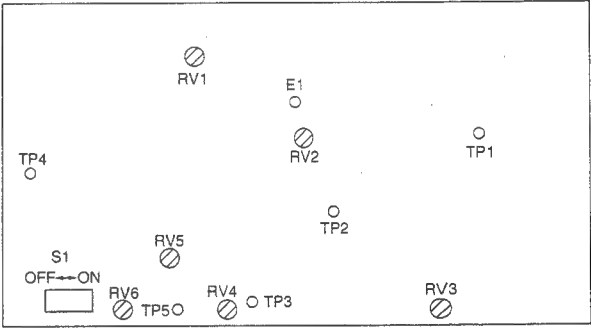
Note 1: White level does not change when RV2 turned.

Note 2: Cross point level of the gray scale → 61 ± 2 IRE (410 ± 15 mV: PAL).

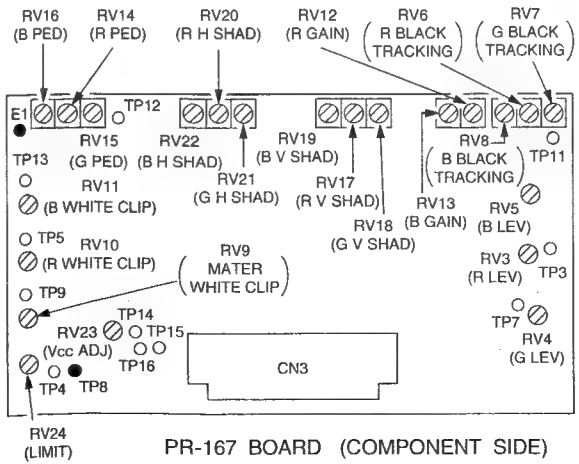
Note 3: When measuring the TP9, connect the resistance (10 kΩ) between the probe and the TP9 connector.



EN-103 BOARD (COMPONENT SIDE)



IE-29 BOARD (COMPONENT SIDE)



PR-167 BOARD (COMPONENT SIDE)

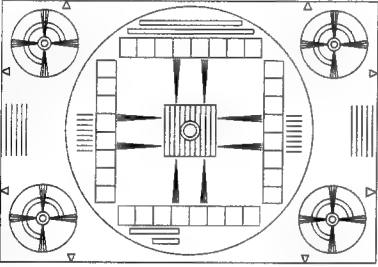
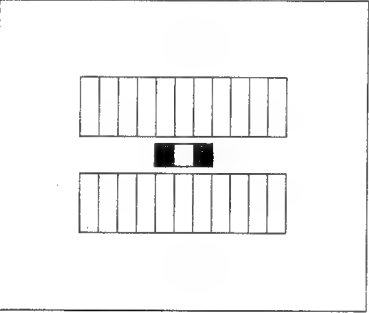
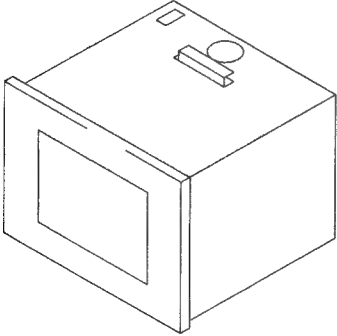
# SECTION 3

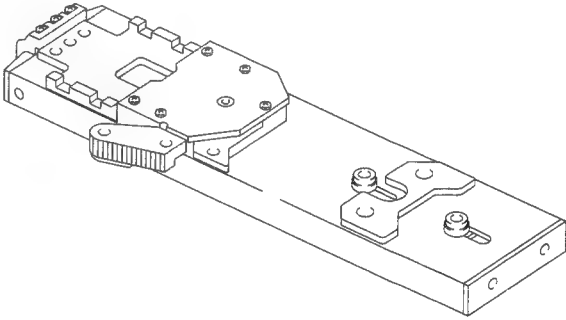
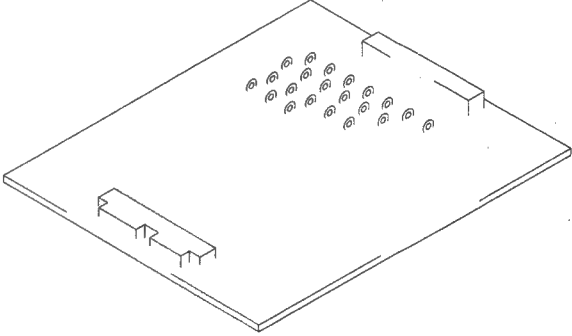
## ALIGNMENT

### 3-1. PREPARATION

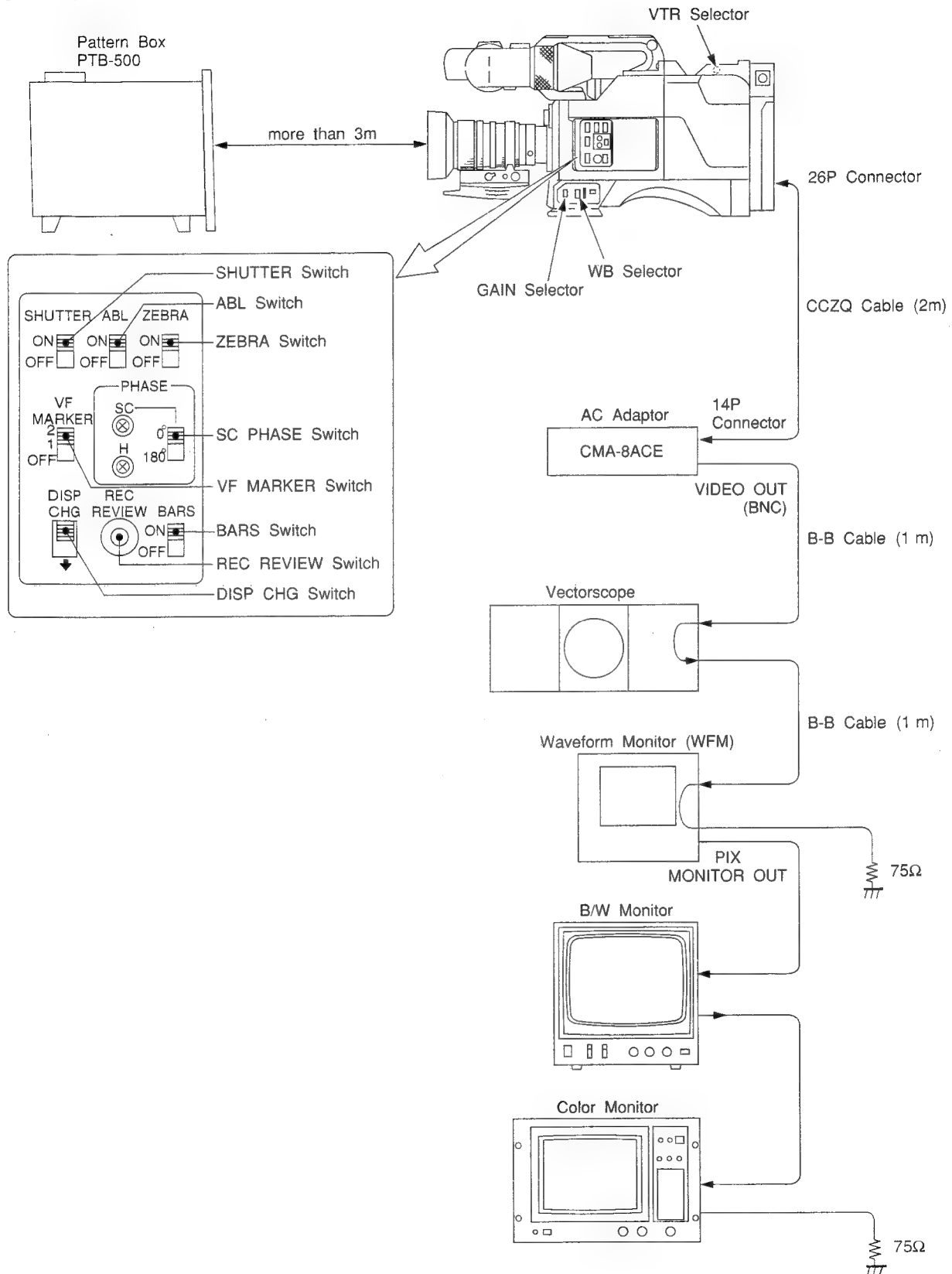
#### 3-1-1. Equipment Required

- Oscilloscope (more than 30 MHz)
- Waveform monitor
- Vectorscope
- Black and white monitor (Sony PVM-91 or equivalent)
- Color Monitor (Sony PVM-1320 or equivalent)
- AC Adaptor (CMA-8ACE)
- Frequency counter

J-6026-100-A	Resolution chart
	
A-6026-130-B	Grayscale chart
	
J-6029-140-B	PTB-500 Pattern Box
•Light source for test chart AC90~240V (PTB-500)	
	

VCT-12 Tripod Adaptor	
	
J-6309-200-A	Extension board EX-327
•For adjustment of IE-29, PR-167, EN-103 and SG-171	
	

### 3-1-2. Connection





### 3-1-3. Initial Setting

Set the camera switches and controls as follows.

GAIN switch:	OdB
WB selector:	PRE
FILTER Knob:	1
ABL (side panel):	OFF (↓)
SHUTTER (side panel):	OFF (↓)
ZEBRA (side panel):	OFF (↓)
O/π (side panel):	O (↑)
BARS (side panel):	OFF (↓)
DTL (SI)/IE-29 board:	ON (↑)
FLD/FRM (SI)/DR-107 board:	FLD (○)
COL B/W (S2)/EN-103 board:	B/W (↓)
RM CHARA (SI)/MB:	OFF (↓)
ZONE SIZE (S2)/MB:	90% (↓)

IRIS (LENS):	M
ZOOM (LENS):	M
VTR SELECT SW (CA-537P):	1

S2 (ADJ/OPE) AT-63 board: ADJ (↑)

**Note:** During the adjustment, do not touch the following switches.

- S2 (ADJ/OPE) AT-63 board

### 3-2. BEFORE ADJUSTMENT

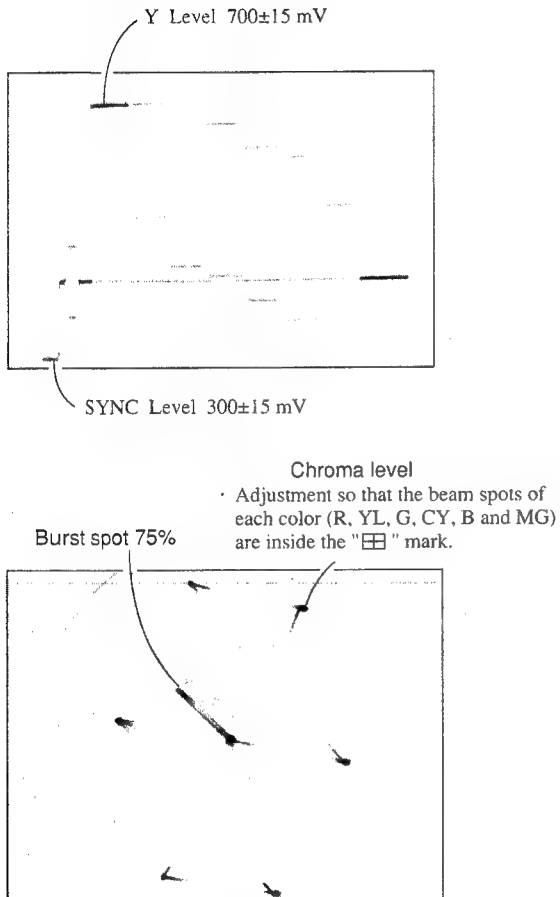
- Note:**
1. Before adjustment, connect the equipments referring to 3-1-2. Connections. And confirm the following specifications are met to 3-2-1. Color Bar Signal.
  2. Before adjustment, set the POWER switch to ON and allow for 10-minute warm-up time.
  3. Partial difference between scale and signal level is caused by photographic error.

### 3-2-1. Color Bar Signal

**Equipment:** Vectorscope, Waveform monitor

**Preparation:** Set the BARS switch on the side of the camera to ON.

**Specifications:**



**Note:** If the specifications are not met, carry out 3-4. ENCODER SYSTEM (PR-167, EN-103 board) adjustment.

### 3-2-2. Sensitivity Measurement

**Object:** White Pattern

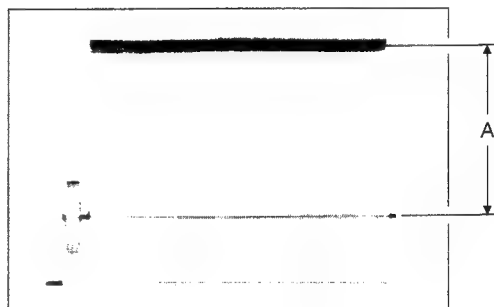
**Light:**  $3200^\circ\text{K}$ , 2000lux (If the pattern box "PTB-100" is used, set the AUTO mode.)

**Equipment:** Waveform monitor

**Preparation:**

1. Adjust the zoom control so that the white pattern frame touches the underscanned picture frame on the monitor.
2. Manually set the iris control to F8.
3. Set the BARS switch on the side of the camera to OFF.
4. Set the WB selector on the side of the camera to PRE.

**Specifications:** Adjust so that the white level "A" is  $700 \pm 20$  mV.



**Note:** If the specification is not met, perform all adjustments in 3-5. VIDEO PROCESS SYSTEM.

### 3-2-3. Gamma and Gradation Measurement

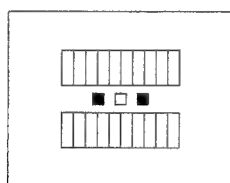
**Object:** Grayscale chart  
(Sony parts number J-6026-130-B)

**Light:** Pattern box PTB-500

**Equipment:** Waveform monitor

**Preparation:**

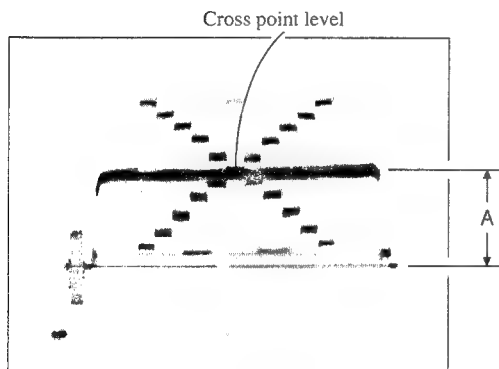
1. Set the BARS switch on the side of the camera to OFF.
2. Set the WB selector on the side of the camera to PRE.
3. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



(Monitor Screen)

4. Adjust the iris control so that the white level of grayscale chart is 700 mV on the waveform monitor.

**Specifications:** Adjust so that the cross point level "A" of the grayscale chart is  $400 \pm 15$  mV.



**Note:** If the specification is not met, carry out 3-5-6. Gch Gamma Balance and Gamma Set Adjustment

### 3-2-4. Resolution Measurement

**Object:** Resolution chart  
(Sony parts number J-6026-100-A)

**Light:** Pattern box PTB-500

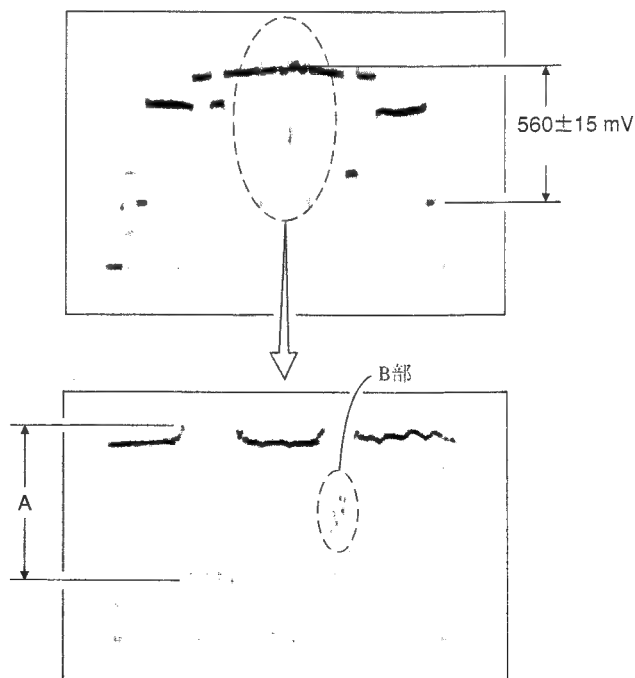
**Equipment:** Waveform monitor. W/B monitor

**Preparation:**

1. Set the WB selector on the side of the camera to PRE.
2. Set the DTL switch (S1)/IE-29 board to ON.
3. Adjust the zoom control so that the resolution chart frame touches the underscanned frame on the monitor.
4. Adjust the iris control so that the white level of the resolution chart is  $560 \pm 15$  mV on the waveform monitor.
5. Set the "LINE SELECTOR" of the waveform monitor to the 700 TV lines of the resolution chart.
6. Adjust the focus control so that amplitude "A" of the resolution chart is maximized.

**Specifications:** Four negative peaks corresponding to four black stripes must appear at the 700 TV lines position "B" of the resolution chart on the monitor. The CCD device has some hundreds of picture elements in the horizontal line. When the vertical black stripes corresponding to 700 TV lines are optically positioned between each element in the CCD, the black stripes do not appear on the monitor. It seems that the resolution has been reduced. In this case, pan the camera slightly so that the best resolution is obtained.

**Note:** If the specification is not met, perform 3-6-6.



RESOLUTION ADJUSTMENT

### 3-2-5. +8.0V Adjustment

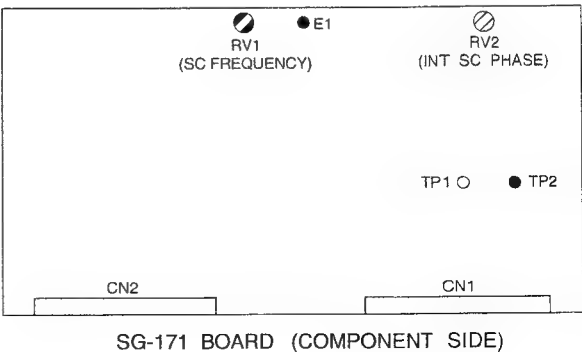
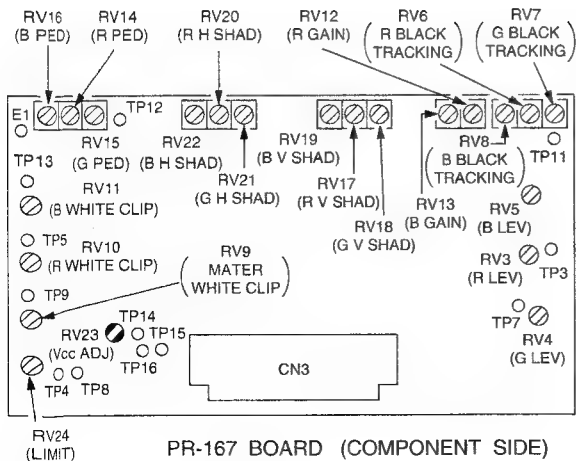
**Note:** This adjustment has an influence on the PR-167 board, IE-29, and EN-103 board operation. If this adjustment is made, the adjustment items of the video signal system and the detailed signal system must all be confirmed. Make adjustments only in cases when the difference between the voltage at the measuring point and the specification value is  $\pm 1\%$  or more.

**Equipment:** Digital voltmeter  
**To be extended:** PR-167 board  
**Test point:** CN2/10pin/PR-167 board  
**Adjustment point:** RV23/PR-167 board  
**Specification:**  $+8.0 \pm 0.1V_{dc}$

### 3-3. SYNC SIGNAL SYSTEM (SG-171 board)

#### 3-3-1. Sub Carrier Frequency Adjustment

**Equipment:** Frequency counter  
**To be extended:** EN-103 board, SG-171 board  
**Test point:** TP2 (GND:E1)/SG-171 board  
**Adjustment point:** RV1/SG-171 board  
**Specification:** 4,433,618 Hz



### 3-3-2. INT SC Phase Adjustment

**Note:** The procedure stated below applies to the adjustments where the Tektronix 1750 is used. If any other measuring instrument is used, observe the instructions given in the operation manual attached to it.

**Equipment:** SC-H Phase measuring instrument

**Preparation:**

- Disconnect the vectorscope, and connect the Tektronix 1750 instead.

- Put the Tektronix 1750 into the SC-H mode.

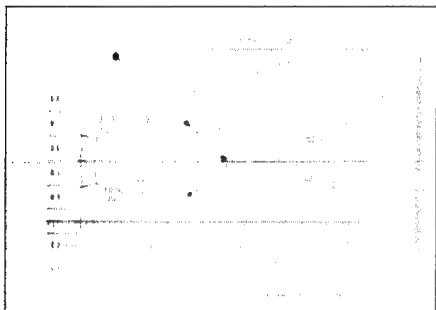
**To be extended:** SG-171 board

**Test point:** VIDEO OUT connector

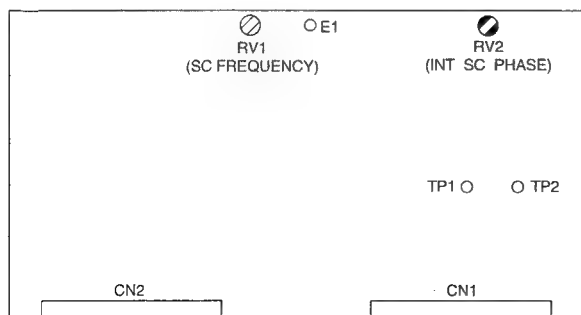
**Adjustment point:** RV2 (IN SC PHASE)/SG-171 board

**Specification:** Shown below.

**Adjustment:** Position the luminous line of bust (SC) and the luminescent spot of H properly.



**Note:** After the adjustment, disconnect the Tektronix 1750, and connect the vectorscope instead.



SG-171 BOARD (COMPONENT SIDE)

### 3-4. ENCODER SYSTEM (EN-103 board)

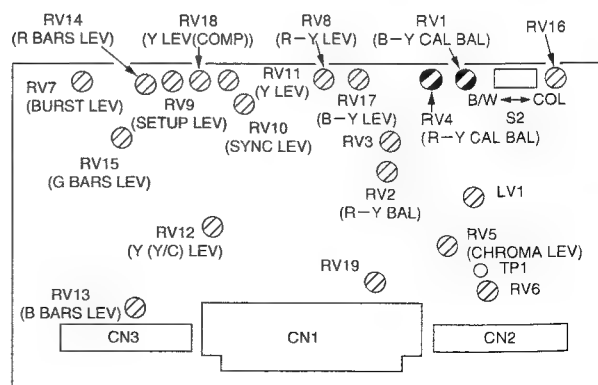
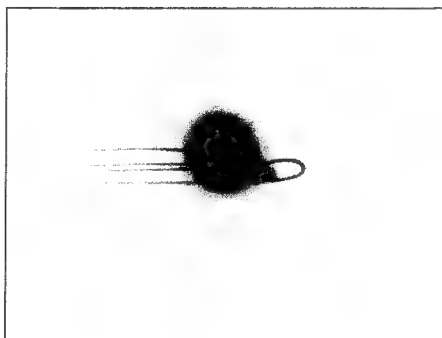
#### 3-4-1. Carrier Balance Adjustment

**Equipment:** Vectorscope (MAX GAIN)

**Preparation:** Set the BARS switch on the side of the camera to ON

**To be extended:** EN-103 board

**Adjustment:** Adjust RV1 and RV4/EN-103 board so that the white beam spot is in the center of the vectorscope.



EN-103 BOARD (COMPONENT SIDE)

### 3-4-2. BARS Level Adjustment

#### Equipment:

- Oscilloscope.
- Waveform monitor

#### Preparation:

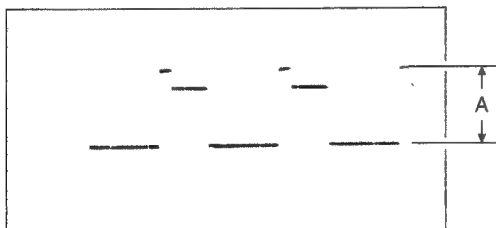
- Set the BARS switch on the side of the camera to ON.
- Set the S1 switch on the IF-313 board (CA-537P) to RGB.

**To be extended:** EN-103 board

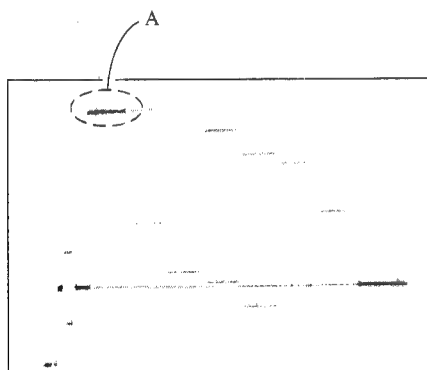
**Trigger:** HD (B21 pin/extension board)

#### Adjustment:

1. Adjust RV15/EN-103 board so that the video level at A6 pin (GND:A8 pin)/extension board is  $1.4 \pm 0.02$  V.



2. Adjust RV13 board and RV14/EN-103 board in turn so that the carrier leak "A" of the gray section at the VIDEO OUT terminal on the side of the camera is minimized.



### 3-4-3. Color Vector Adjustment

#### Equipment: Vectorscope

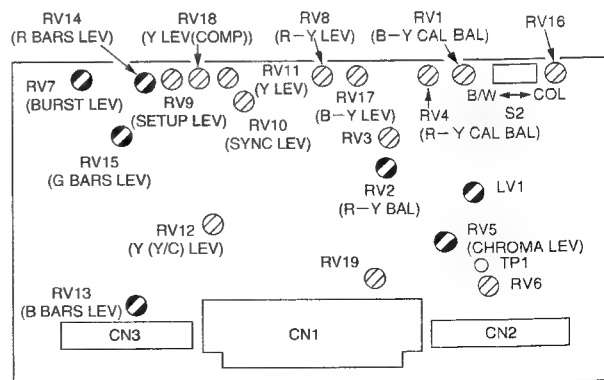
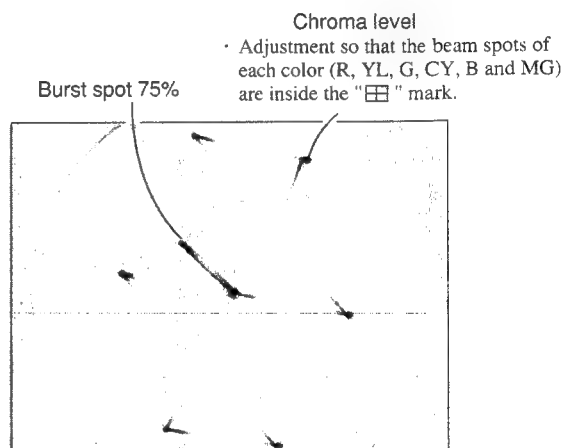
#### Preparation:

- Set the GAIN switch on the vectorscope to 75%.
- Adjust "PHASE" control on the vectorscope so that the burst spot is set to the 75% axis.
- Set the BARS switch on the side of the camera to ON.

**To be extended:** EN-103 board

#### Adjustment:

1. Adjust RV2, RV5, LV1/EN,103 board so that the beam spots of each color are inside the "田" mark.
2. Adjust RV7/EN-103 board so that the burst Level is set to the 75% position.



EN-103 BOARD (COMPONENT SIDE)

### 3-4-4. Y.SYNC Level Adjustment

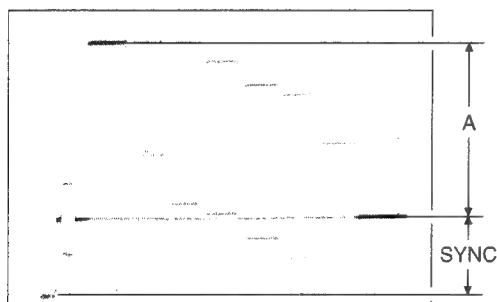
**Equipment:** Waveform monitor

**Preparation:** Set the BARS switch on the side of the camera to ON.

**To be extended:** EN-103 board

**Adjustment:**

1. Adjust  $\odot$  RV11/EN-103 board so that the A level of the color bars signal is  $700 \pm 10$  mV.
2. Adjust  $\odot$  RV10/EN-103 board so that the SYNC level of the color bars signal is  $300 \pm 10$  mV.



### 3-4-5. COMPONENT Y Level Adjustment

**Equipment:** Oscilloscope

**Preparation:**

- Set the S1 switch on the IF-313 board (CA-537P) to CENTER POSITION
- Set the BARS switch on the side of the camera to ON.

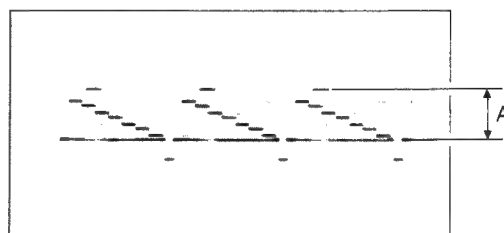
**To be extended:** EN-103 board

**Test point:** A6 pin (GND:A8 pin)/EN-103 board

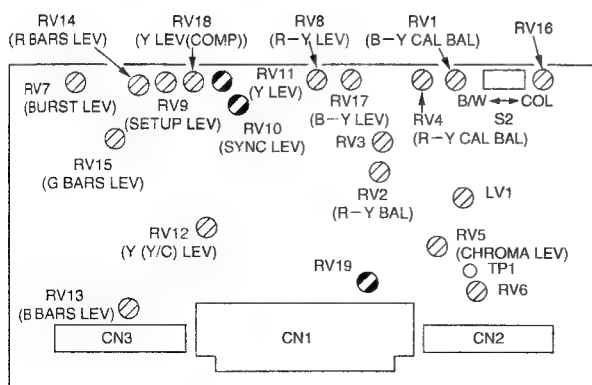
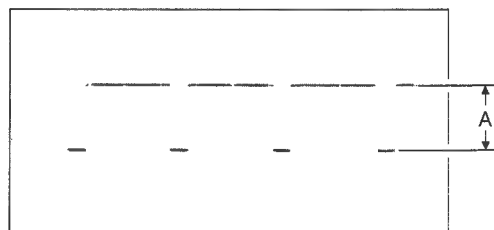
**Trigger:** HD (B21 pin/extension board)

**Adjustment:**

1. Adjust  $\odot$  RV18/EN-103 board so that the "A" level is  $700 \pm 10$  mV



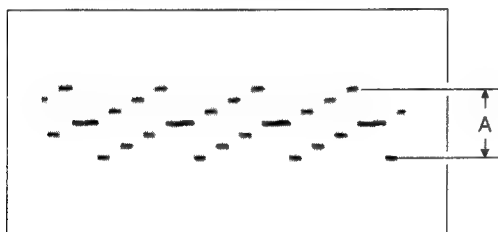
2. Set the BARS switch on the side of camera to OFF
3. Lens iris  $\rightarrow$  OPEN
4. Set the GAIN switch on the side of camera to 18 dB
5. Turn the control on the  $\odot$  RV19/EN-103 board from the left extreme to the right extreme position and stop turning when the level "A" stops changing.
6. After this adjustment is completed, set the GAIN switch on the side of the camera to 0 dB.



EN-103 BOARD (COMPONENT SIDE)

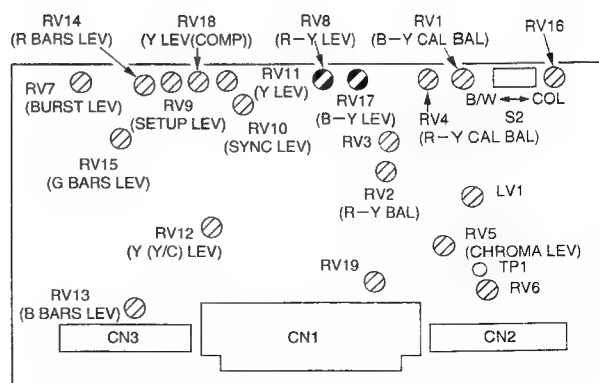
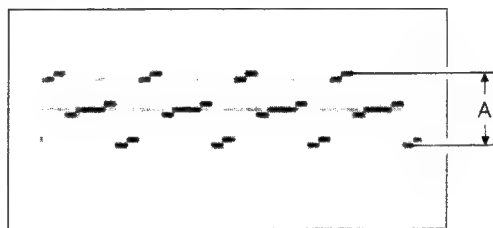
### 3-4-6. B-Y OUT Level Adjustment

**Equipment:** Oscilloscope  
**Preparation:** Set the BARS switch on the side of the camera to ON.  
**To be extended:** EN-103 board  
**Test point:** A5 pin (GND:A8 pin)/extension board  
**Trigger:** HD (B21 pin/extension board)  
**Adjustment point:** RV17/EN-103 board  
**Specifications:**  $A=525 \pm 10$  mV



### 3-4-7. R-Y OUT Level Adjustment

**Equipment:** Oscilloscope  
**Preparation:** Set the BARS switch on the side of the camera to ON.  
**To be extended:** EN-103 board  
**Test point:** A7 pin (GND:A8 pin)/extension board  
**Trigger:** HD (B21 pin/extension board)  
**Adjustment point:** RV8/EN-103 board  
**Specifications:**  $A=525 \pm 10$  mV



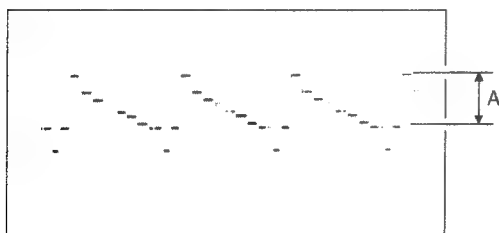
EN-103 BOARD (COMPONENT SIDE)



### 3-4-8. Y/C Y Level Adjustment

**Note:** Before this adjustment, carry out 3-4-4 color vector adjustment

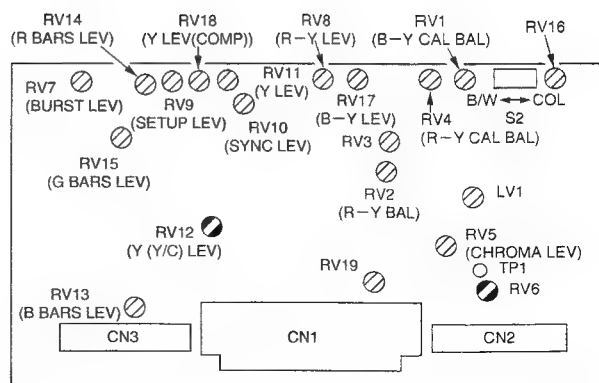
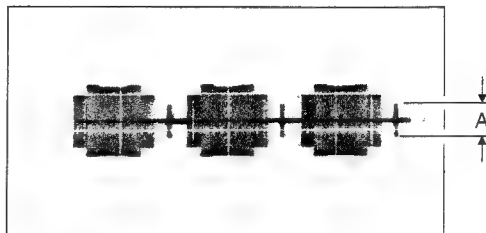
**Equipment:** Oscilloscope  
**Preparation:** Set the BARS switch on the side of camera to ON  
**To be extended:** EN-103 board  
**Test point:** A9 pin (GND:A10 pin)/extension board  
**Adjustment:** ⓪RV12/EN-103 board so that the white level "A" of Y signal is  $700 \pm 10$  mV.



### 3-4-9. Y/C Chroma Level Adjustment

**Note:** Before this adjustment, carry out 3-4-4 color vector adjustment

**Equipment:** Oscilloscope  
**Preparation:** Set the BARS switch on the side of camera to ON  
**To be extended:** EN-103 board  
**Test point:** A11 pin (GND:A12 pin)/extension board  
**Adjustment:** ⓪RV6/EN-103 board so that the burst level "A" in the chroma signal is  $300 \pm 5$  mV



EN-103 BOARD (COMPONENT SIDE)

### 3-4-10. Zebra Adjustment

**Equipment:** Viewfinder

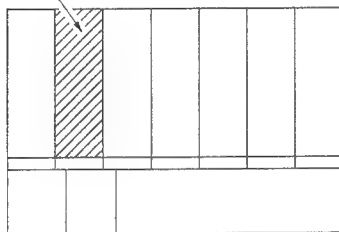
**Preparation:**

- Set the BARS switch on the side of the camera to ON.
- Set the ZEBRA switch on the side of the camera to ON.

**To be extended:** EN-103 board

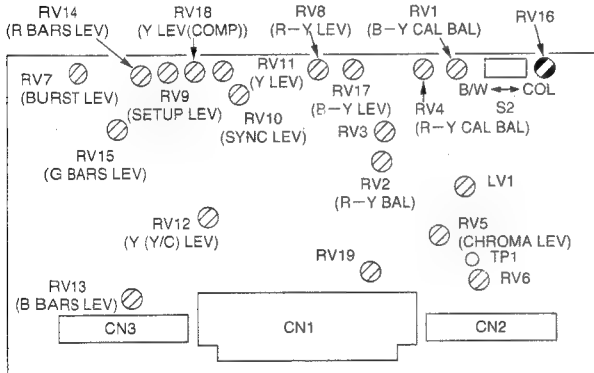
**Adjustment:** Adjust RV16/EN-103 board so that the ZEBRA pattern is displayed at the second color bar from the left on the view finder screen.

Zebra pattern

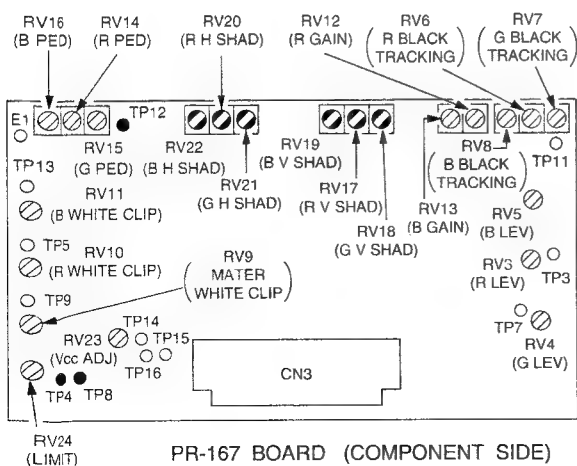


(Viewfinder Screen)

**Note:** After this adjustment is completed, set ZEBRA switch on the side of camera to OFF.



EN-103 BOARD (COMPONENT SIDE)



PR-167 BOARD (COMPONENT SIDE)

### 3-5. VIDEO PROCESS SYSTEM

#### 3-5-1. H/V Shading Adjustment

**Object:** White pattern

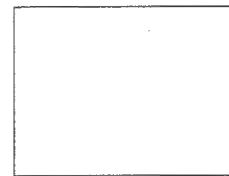
**Equipment:** Oscilloscope

**Preparation:** Set the WB selector on the side of the camera to PRE.

**To be extended:** PR-167 board

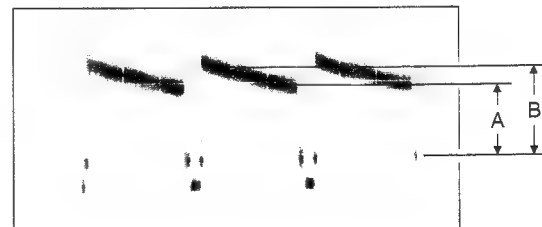
**Adjustment:**

1. Adjust the zoom control so that the white pattern frame touches the underscanned picture frame on the screen.



(Monitor Screen)

2. Set the diaphragm to  $F \approx 11$ .  
<Trigger:HD (A19/extension board)>
3. Make the waveform of the TP4/PR-167 board flat by using RV20/PR-167board.  $B \approx A$
4. Make the waveform of the TP8/PR-167 board flat by using RV21/PR-167board.  $B \approx A$
5. Make the waveform of the TP12/PR-167 board flat by using RV22/PR-167 board.  $B \approx A$ . <Trigger: HD (A25/extension board)>
6. Make the waveform of the TP4/PR-167 board flat by using RV17/PR-167board.  $B \approx A$
7. Make the waveform of the TP8/PR-167 board flat by using RV18/PR-167board.  $B \approx A$
8. Make the waveform of the TP12/PR-167 board flat by using RV19/PR-167 board.  $B \approx A$

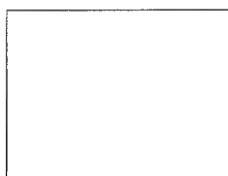


### 3-5-2. Gch Video Level Adjustment

**Object:** White pattern  
**Equipment:** Oscilloscope  
**Preparation:** Set the WB selector on the side of the camera to PRE.

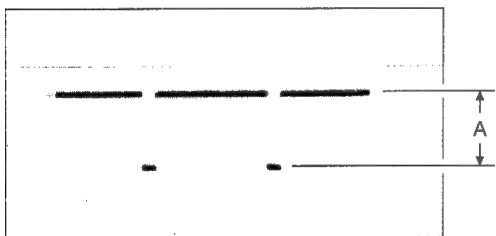
**To be extended:** PR-167 board  
**Trigger:** HD (A19/extension board)  
**Adjustment:**

1. Adjust the zoom control so that the white pattern frame touches the underscanned picture frame on the screen.

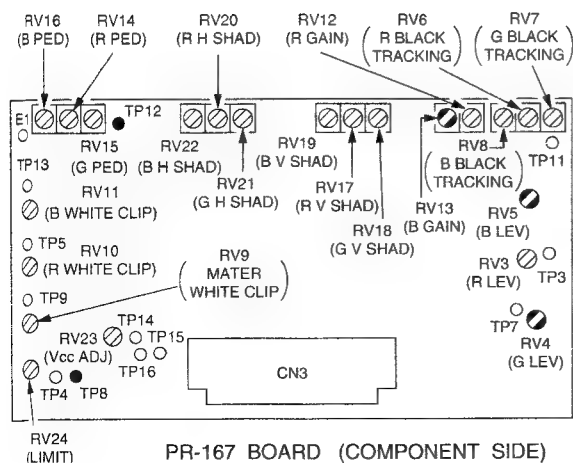


(Monitor Screen)

2. Lens iris  $\rightarrow F \div 8$
3. Adjust  $\odot$  RV4/PR-167 board so that the video level "A" at TP8/PR-167 board is  $680 \pm 10$  mV.



**Note:** Carry out this adjustment through 3-5-4 Rch Video Level Adjustment keeping the iris control set to F8.



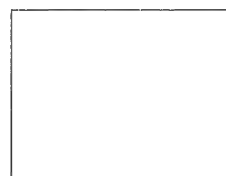
### 3-5-3. Bch Video Level and Pre-gain Adjustment

**Note:** Be sure to carry out 3-5-2 Gch Video Level Adjustment before this adjustment.

**Object:** White pattern  
**Equipment:** Oscilloscope  
**Preparation:** Set the WB selector on the side of the camera to PRE.

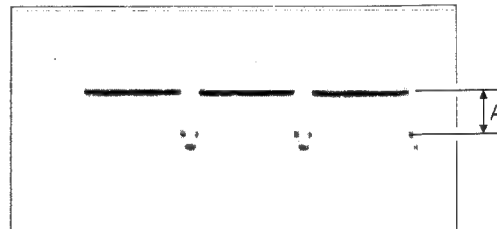
**To be extended:** PR-167 board  
**Trigger:** HD (A19/extension board)  
**Adjustment:**

1. Adjust the zoom control so that the white pattern frame touches the underscanned picture frame on the monitor.

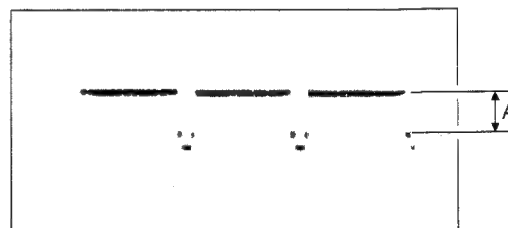


(Monitor Screen)

2. Adjust  $\odot$  RV5/PR-167 board so that the video level "A" at TP11/PR-167 board is  $180 \pm 5$  mV.



3. Adjust  $\odot$  RV13/PR-167 board so that the video level "A" at TP12/PR-167 board is  $680 \pm 10$  mV.



### 3-5-4. Rch Video Level and Pre-gain Adjustment

**Note:** Be sure to carry out 3-5-3 Bch Level Adjustment before this adjustment.

**Object:** White pattern

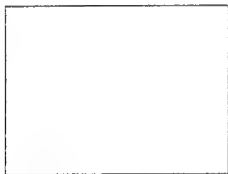
**Equipment:** Oscilloscope

**Preparation:** Set the BARS switch on the side of the camera to OFF. Set the WB selector on the side of the camera to PRE.

**Test point:** TP4 (GND:E1)/PR-167 board

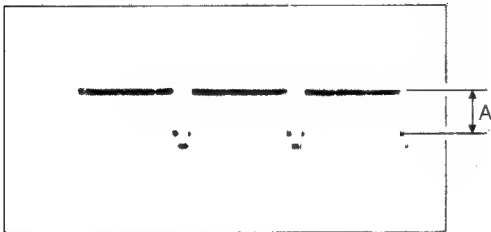
**Adjustment:**

1. Adjust the zoom control so that the white pattern frame touches the underscanned picture on the monitor.

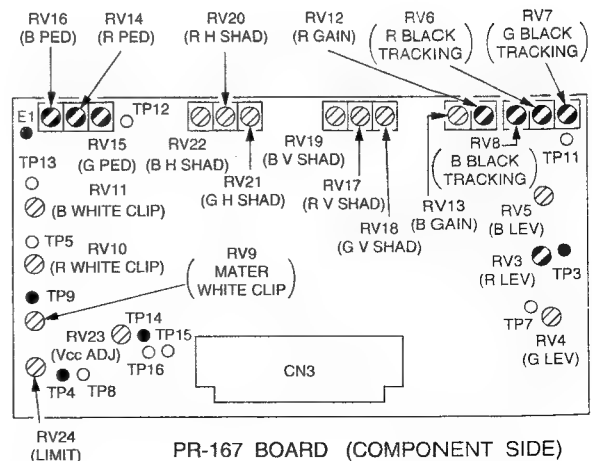
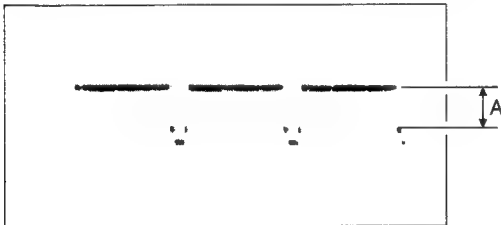


(Monitor Screen)

2. Adjust RV3/PR-167 board so that the video level "A" at TP3/PR-167 board is  $340 \pm 5$  mV.



3. Adjust RV12/PR-167 board so that the video level "A" at TP4/PR-167 board is  $680 \pm 10$  mV.

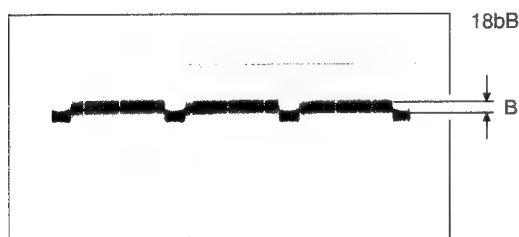
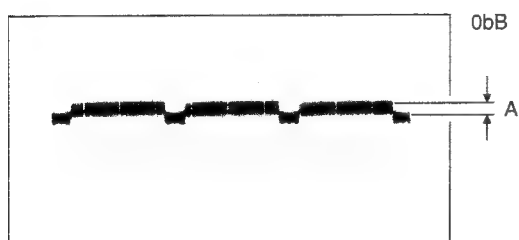


### 3-5-5. Black Set and Pedestal Adjustments

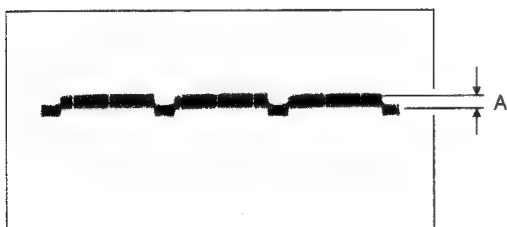
**Lens iris:** Close "C"  
**Equipment:** Oscilloscope, Vectorscope (MAX GAIN)  
**Preparation:** Set the DTL (S1) switch on the IE-29 board to OFF.  
**To be extended:** PR-167 board  
**Test point:** TP9 (GND:E1)/PR-167 board (Connect at 10 K $\Omega$  resistor between the oscilloscope probe and TP9.)

#### Adjustment:

1. Adjust RV7/PR-167 board so that pedestal level does not change when the GAIN switch on the side of the camera is switched over from 0 dB to 18 dB (A=B).



2. Set the GAIN switch on the side of the camera to 0 dB.
3. Adjust RV15/PR-167 board so that the pedestal level "A" is 40 $\pm$ 5 mV.

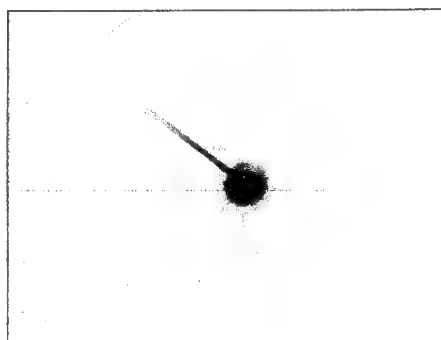


4. Set the GAIN switch on the side of the camera to 18 dB.

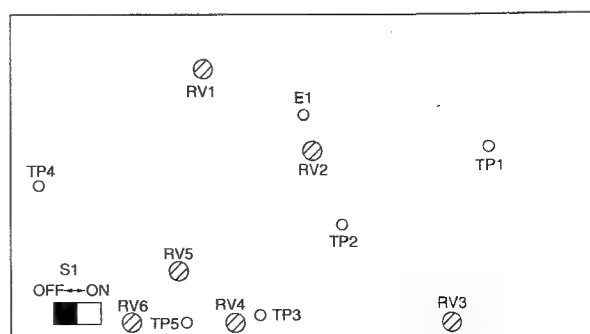
5. Adjust RV6 and RV8/PR-167 board so that the beam spot is in the center of the vectorscope.



6. Set the GAIN switch on the side of the camera to 0 dB.
7. Adjust RV14 and RV16/PR-167 board so that the beam spot is in the center of the vectorscope.



8. Repeat step 4 through step 7 several times.
9. Set the GAIN switch on the side of the camera to 0 dB.
10. Set the DTL (S1) switch on the IE-29 board to ON.

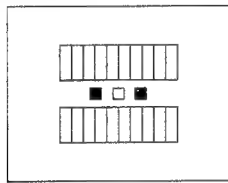


IE-29 BOARD (COMPONENT SIDE)

### 3-5-6. Gch Gamma Balance and Gamma Set Adjustment

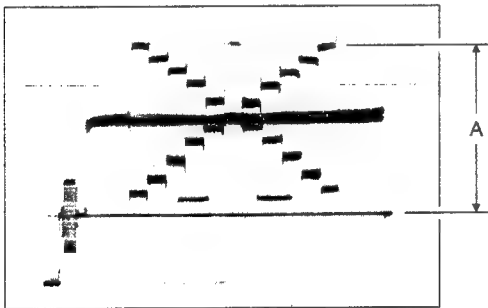
**Object:** Grayscale chart  
**Equipment:** Oscilloscope  
**To be extended:** PR-167 board  
**Test point:** TP9 (GND:E1)/PR-167 board  
**Trigger:** HD (A19/extension board)  
**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.

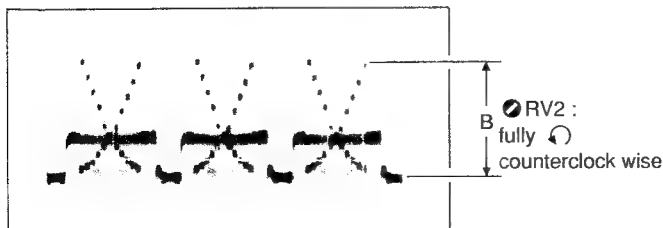
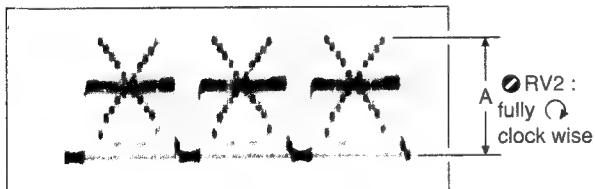


(Monitor Screen)

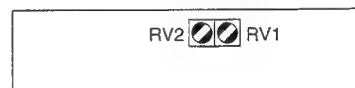
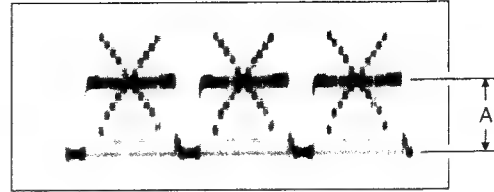
2. Adjust the iris control so that the video level "A" is 700 mV on the waveform monitor. ( $F \div 8$ )



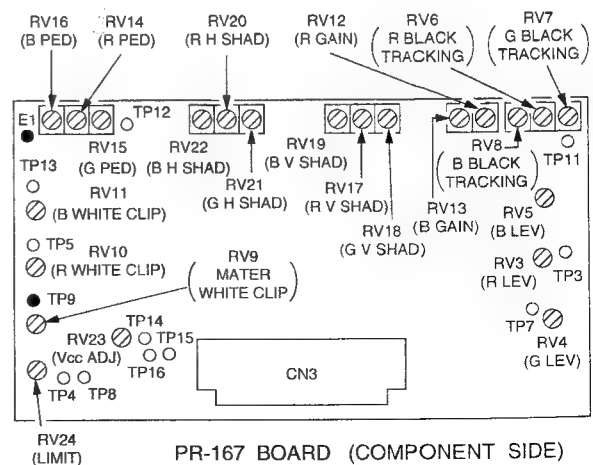
3. Adjust RV1/BP-013G board so that the white level of the video signal does not change. When RV2/BP-013G board is turned either fully counterclockwise or fully clockwise. ( $A=B$ )



4. Adjust RV2/BP-013G board so that the cross-point level "A" of the grayscale chart is  $900 \pm 10$  mV.



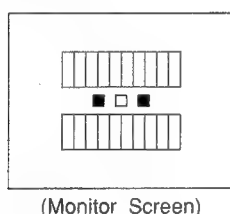
BP-013G BOARD  
(COMPONENT SIDE)



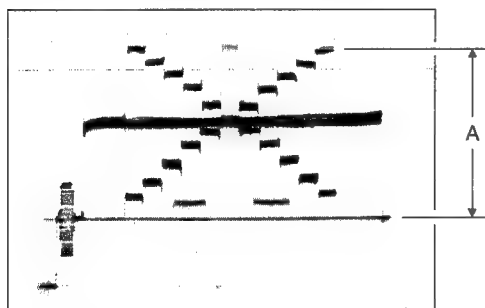
### 3-5-7. Rch Gamma Balance Adjustment

**Object:** Grayscale chart  
**Equipment:** Oscilloscope  
**Preparation:** Set the BARS selector on the side of camera to PRE  
**To be extended:** PR-167 board  
**Test point:** TP5 (GND:E1)/PR-167 board  
**Trigger:** HD (A19/extension board)  
**Adjustment:**

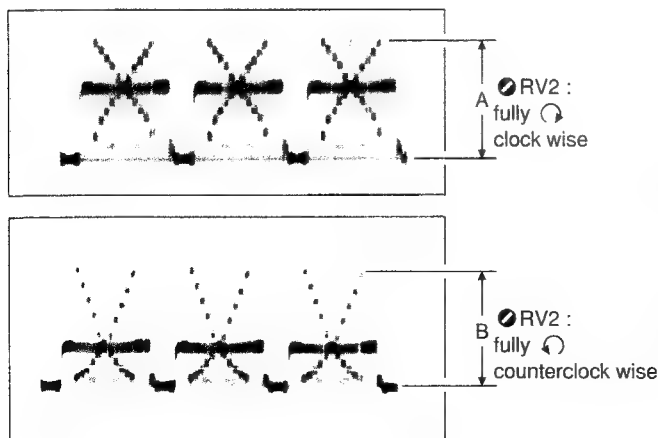
1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



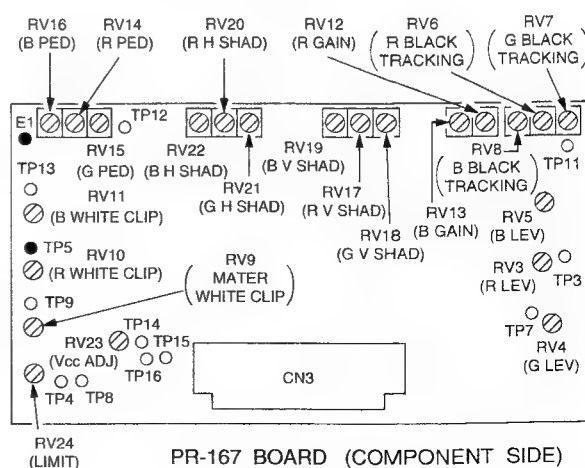
2. Adjust the iris control so that the video level "A" is 700 mV on the waveform monitor.



3. Adjust RV1/BP-013R board so that the white level of the video signal at TP5/PR-167 board does not change when RV2/BP-013R board is turned either fully counterclockwise or fully clockwise. (A=B)



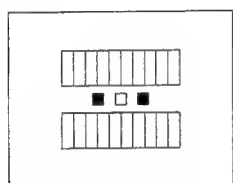
BP-013R BOARD  
(COMPONENT SIDE)



### 3-5-8. Bch Gamma Balance Adjustment

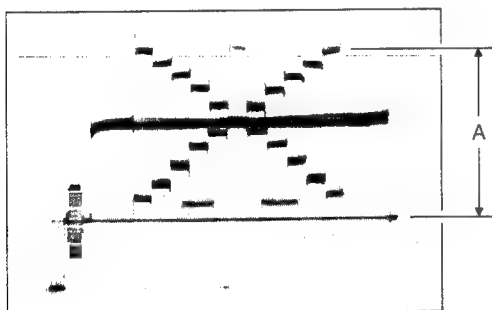
**Object:** Grayscale chart  
**Equipment:** Oscilloscope  
**Preparation:** Set the BARS selector on the side of the camera to PRE.  
**To be extended:** PR-167 board  
**Test point:** TP11 (GND:E1)/PR-167 board  
**Trigger:** HD (A19/extension board)  
**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.

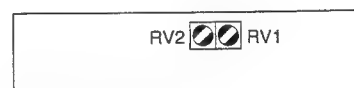
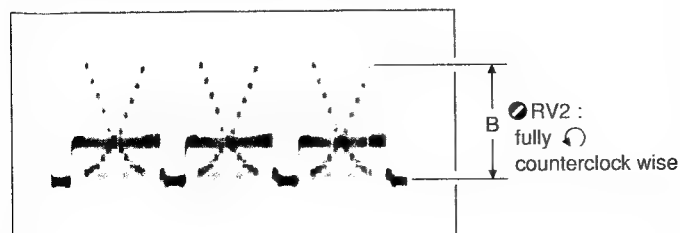
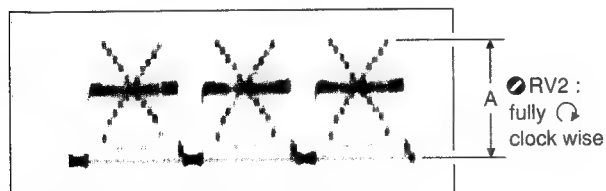


(Monitor Screen)

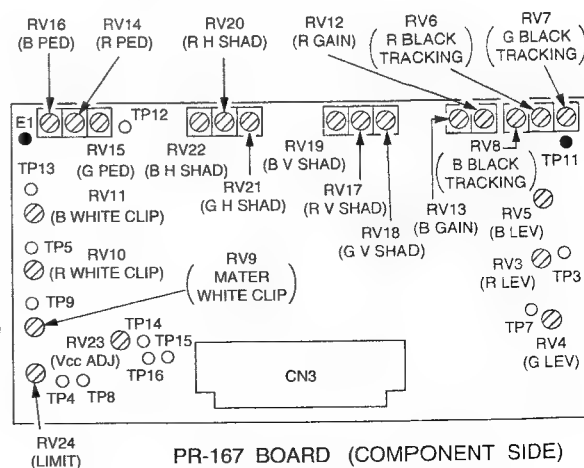
2. Adjust the iris control so that the video level "A" is 700 mV on the waveform monitor.



3. Adjust RV1/BP-013 board so that the white level of the video signal at TP11/PR-167 board does not change when RV2/BP-013 board is turned either fully counterclockwise or fully clockwise.



BP-013B BOARD  
(COMPONENT SIDE)



PR-167 BOARD (COMPONENT SIDE)



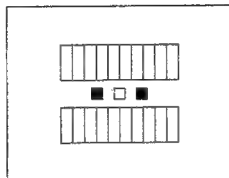
### 3-5-9. R/B ch Gamma Set and Preset Adjustment

**Object:** Grayscale chart

**Equipment:** Waveform monitor, Vectorscope (MAX GAIN)

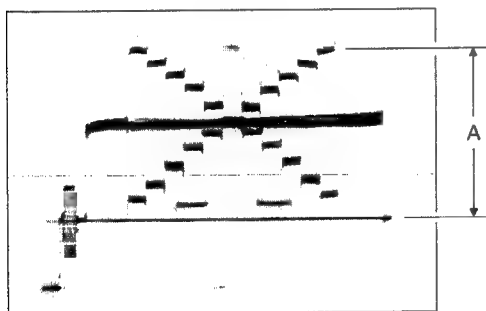
**Adjustment:**

1. Adjust the zoom control so that grayscale chart frame touches the underscanned picture frame on the monitor.



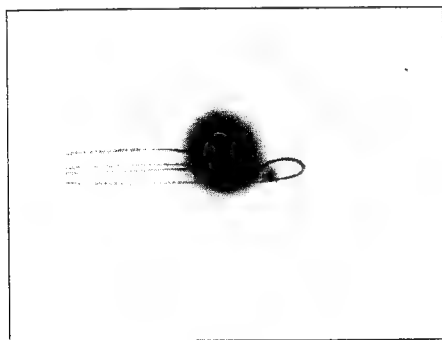
(Monitor Screen)

2. Adjust the iris control so that the white level "A" is 700 mV on the waveform monitor.

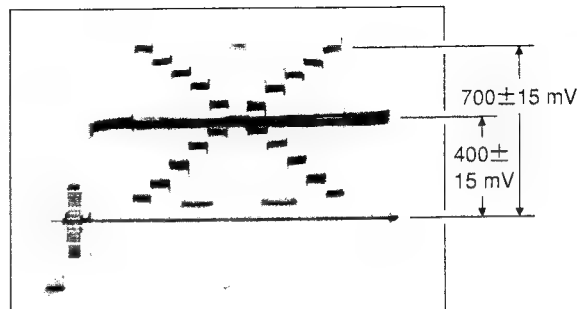


3. RV12 (R GAIN)/PR-167 board  
RV13 (B GAIN)/PR-167 board  
RV2 (Rr ADJ)/BP-013R board  
RV2 (Br ADJ)/BP-013B board

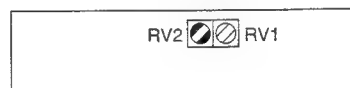
Alternately adjust the above four controls several times so that the beam spot is in the center of vectorscope.



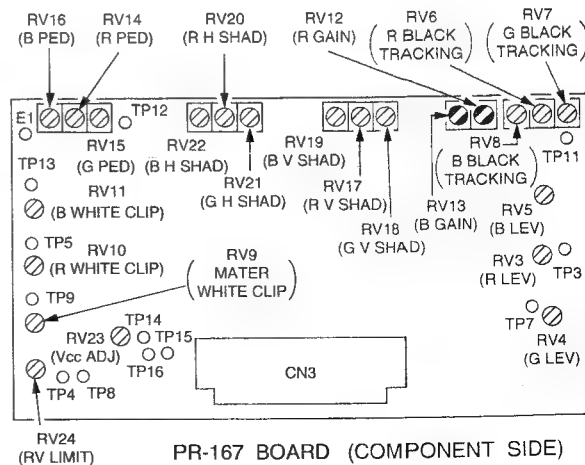
4. After the adjustment, the following specifications must be met. If not, perform 3-5-1 H/V Shading Adjustment once more.



BP-013R BOARD  
(COMPONENT SIDE)



BP-013B BOARD  
(COMPONENT SIDE)



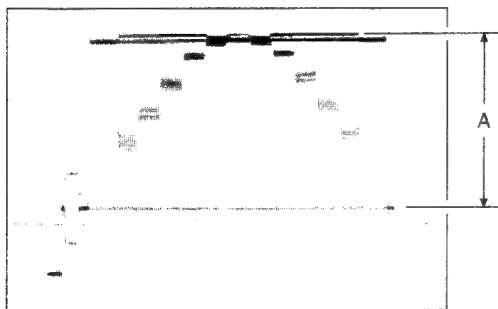
### 3-5-10. White Clip Adjustment

**Object:** Grayscale chart  
**Equipment:** Waveform monitor  
**Preparation:** Set the WB selector on the side of the camera to PRE.  
 Set the GAIN switch on the side of the camera to 18 dB.

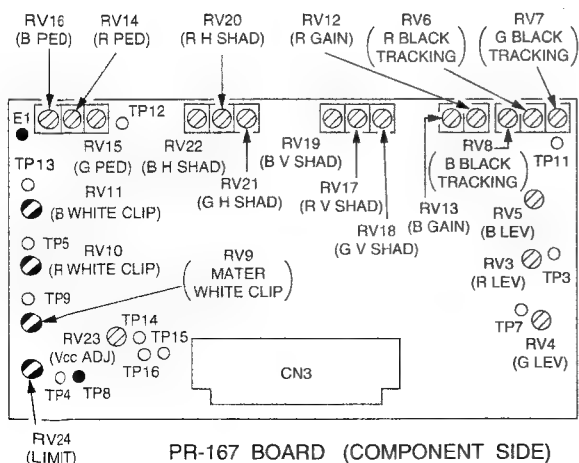
**To be extended:** PR-167 board

#### Adjustment:

1. Adjustment the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.
2. Set the iris control to OPEN.
3. Adjust RV10 and RV11/PR-167 board several times so that the carrier leakage of the white peak level is minimized.
4. Adjust RV9/PR-167 board so that the white peak level "A" is  $800 \pm 15$  mV.



5. Adjustment repeat step3
6. Turn the control on RV24/PR-167 board to the left extreme position and then turn clockwise until the same level that is obtained in 4 is reached.
7. After the adjustment, perform 3-4-5 COMPO-NENT Y Level Adjustment step2 and late.



### 3-6. IMAGE ENHANCER SYSTEM (IE-29 board)

#### 3-6-1. 1H GAIN Adjustment

**Object:** Grayscale chart  
**Equipment:** Oscilloscope  
**Preparation:** Set the WB selector on the side of the camera to PRE.

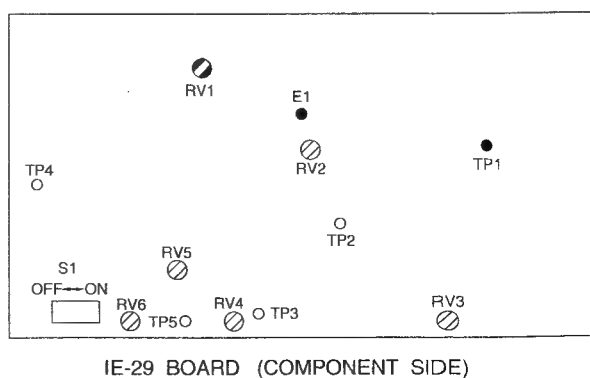
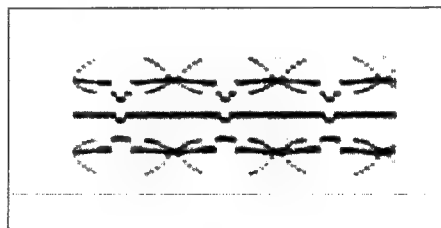
**To be extended:** R-167 board, IE-29 board

**Test point:** Ch1:TP1 (GND:E1)/IE-29 board  
 Ch2:TP8 (GND:E1)/PR-167 board

**Trigger:** HD (A19)/extension board

#### Adjustment:

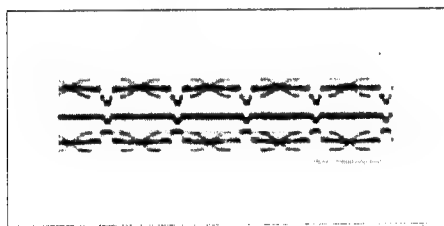
1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.
2. Check the waveform composed by inverting the Ch2 and adding it to the Ch1 on the oscilloscope.
3. Adjust RV1/IE-29 board so that waveform checked in Step 2 to be flat.



### 3-6-2. 2H GAIN Adjustment

**Object:** Grayscale chart  
**Equipment:** Oscilloscope  
**Preparation:** Set the WB selector on the side of the camera to PRE.  
**To be extended:** PR-167 board, IE-29 board  
**Test point:** Ch1:TP2 (GND:E1)/IE-29 board  
 Ch2:TP8 (GND:E1)/PR-167 board  
**Trigger:** HD (A19)/extension board  
**Adjustment point:** RV2/IE-29 board  
**Adjustment:**

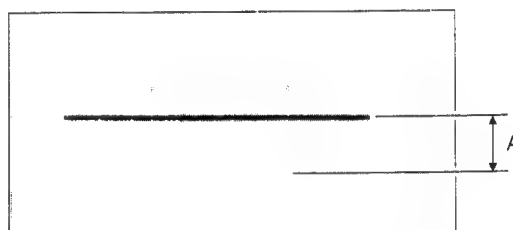
1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.
2. Check the waveform composed by inverting the Ch2 and adding it to the Ch1 on the oscilloscope.
3. Adjust RV2/IE-29 board so that waveform checked in Step 2 to be flat.



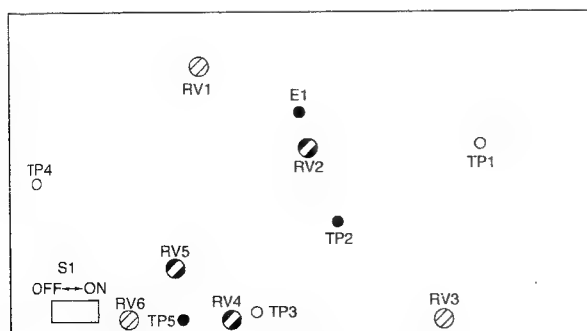
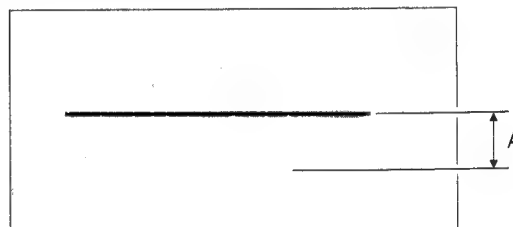
### 3-6-3. Crispening Adjustment

**Object:** Oscilloscope  
**Preparation:** Lens → CLOSE  
 RV5/IE-29 board fully clockwise (○).  
 Set the GAIN switch on the side of the camera to 0 dB.  
**To be extended:** PR-167 board, IE-29 board  
**Test point:** TP5/IE-29 board  
**Trigger:** HD (A19)/extension board  
**Adjustment point:** RV4/IE-29 board  
 RV5/IE-29 board

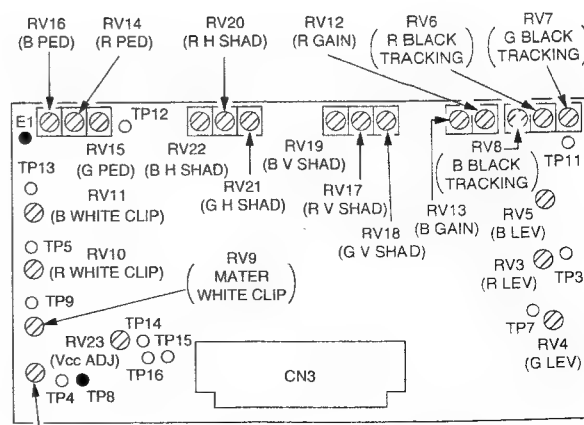
- Adjustment:**
1. Adjust RV4/IE-29 board so that "A" is 270 mV.



2. Adjust RV5/IE-29 board gradually to the left so that "A" is 200 mV.



IE-29 BOARD (COMPONENT SIDE)



PR-167 BOARD (COMPONENT SIDE)

### 3-6-4. H.V.RATIO Adjustment

**Object:** Grayscale chart  
**Equipment:** B/W monitor screen  
**Preparation:** Set the S1 (DTL) switch on the IE-29 board to ON. Set the WB selector on the side of the camera to PRE.

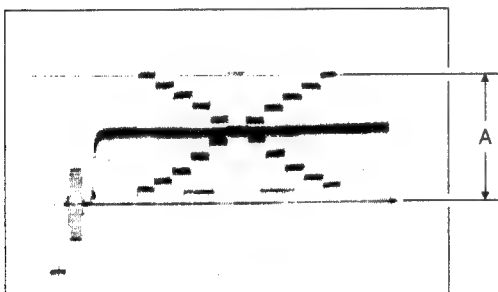
**To be extended:** PR-167 board

**Adjustment point:** RV4/IE-29 board

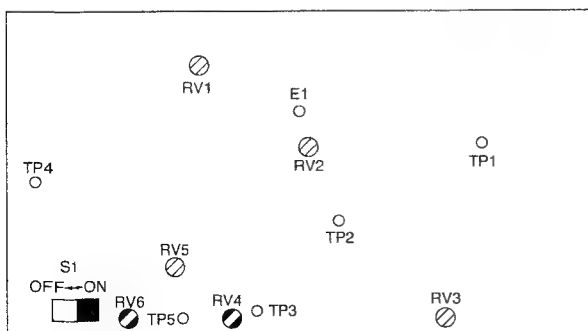
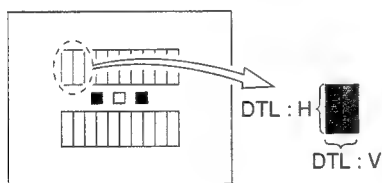
**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.

2. Adjust the iris control so that the white level "A" of the grayscale chart is  $560 \pm 15$  mV.



3. Watching the indicated point on the B/W monitor (See the figure below), adjust RV4/IE-29 board so that the DTL H and V are balanced.



IE-29 BOARD (COMPONENT SIDE)

### 3-6-5. Detail Level Adjustment

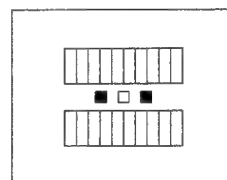
**Object:** Grayscale chart  
**Equipment:** Waveform monitor  
**Preparation:** Set the WB selector on the side of camera to PRE. Set the S1 (DTL) switch on the IE-29 board to ON.

**To be extended:** PR-167 board, IE-29 board

**Adjustment point:** RV6/IE-19 board

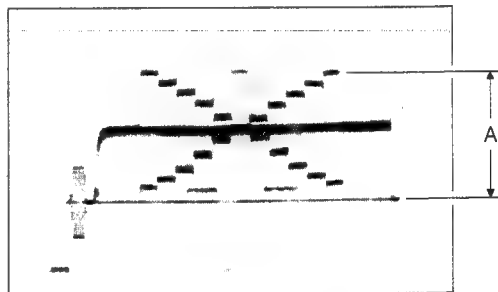
**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



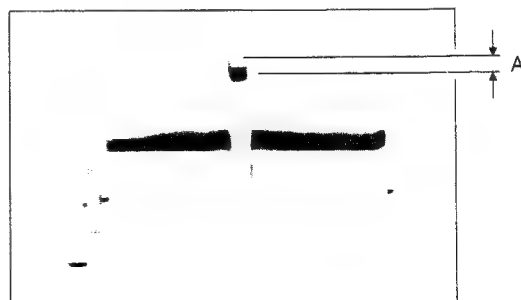
(Monitor Screen)

2. Adjust the iris control so that the white level "A" of the grayscale chart is  $560 \pm 15$  mV.



3. Adjust "LINE SELECTOR (15 LINE)" of the waveform monitor so that a selected line is overlapped with white level of the grayscale chart on the waveform monitor. Adjust RV6/IE-29 board so that the DTL level "A" is  $55 \pm 20$  mV.

**Note:** If the two DTL levels "A" are not balanced, take the bigger one.



4. After the adjustment, set the DTL switch (S1)/IE-29 to OFF.

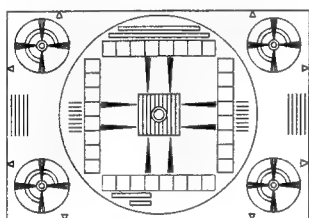
### 3-6-6. Resolution Adjustment (IE-29 board, DR-107 board)

**Object:** Resolution chart  
**Equipment:** Waveform monitor, W/B monitor  
**Preparation:** Set the WB selector on the side of the camera to PRE.

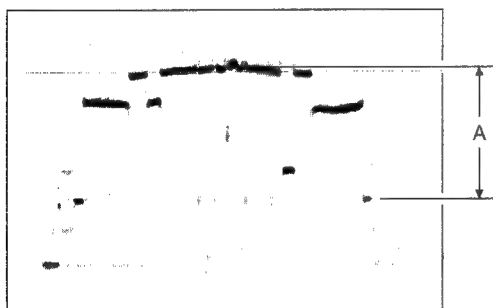
**To be extended:** PR-167 board, IE-29 board

#### Adjustment:

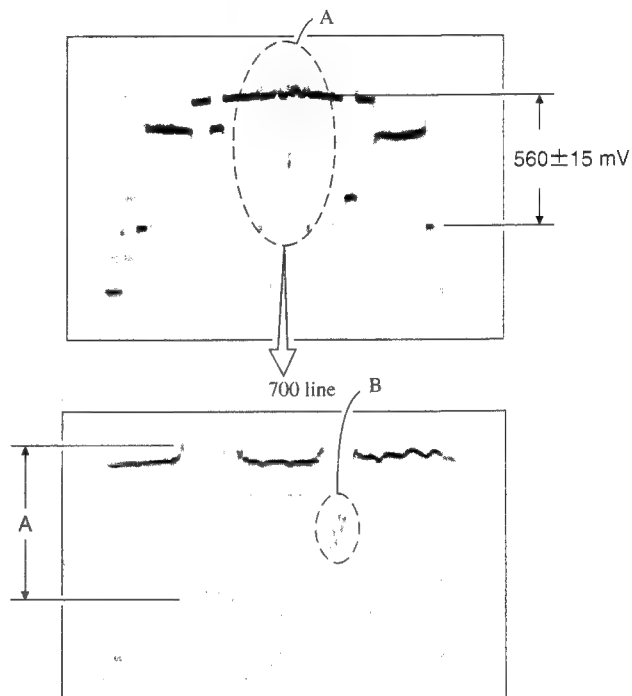
1. Adjust the zoom control so that the resolution chart frame touches the underscanned picture frame on the monitor.



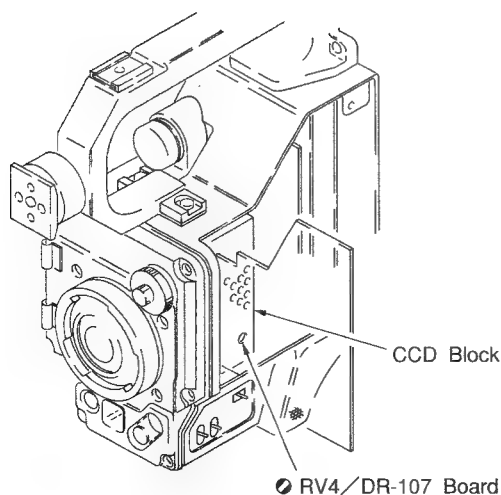
2. Adjust the iris control so that the white level "A" of the resolution chart is  $560 \pm 15$  mV.



3. Adjust "LINE SELECTOR" of waveform monitor so that a selected line is overlapped with 700-line of the resolution chart on the waveform monitor.
4. Adjust the focus control so that the amplitude portion "A" of the video signal is maximized.
5. Repeatedly adjust RV4 on the DR-107 board and RV3 on the IE-29 board alternately so that the number of lower peaks (black level) of the amplitude at "portion A" in the resolution chart is 4.



**Note:** The CCD device has some hundreds of picture elements in the horizontal line. When the vertical black stripes corresponding to 700 TV lines are optically positioned between each element in the CCD, the black stripes do not appear on the monitor. It seems that the resolution has been reduced. In this case, pan the camera slightly so that the best resolution is obtained.



### 3-7. AUTO SYSTEM (AT-63 board)

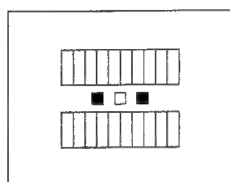
#### 3-7-1. LOW LIGHT Adjustment

**Object:** Grayscale chart  
**Equipment:** Waveform monitor  
**Preparation:** Set the WB selector on the side of the camera to PRE.

**Adjustment point:** RV1/AT-63 board

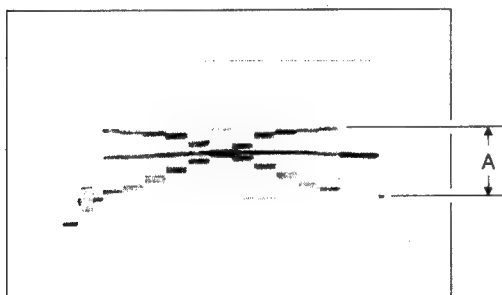
**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



(Monitor Screen)

2. Adjust the iris control so that the white level "A" of the grayscale chart is  $300 \pm 15$  mV.



3. Adjust RV1/AT-63 board counterclockwise form the rightmost position until the point where the "LOW LIGHT" indication and the "LOW LIGHT" lamp light up on the viewfinder screen.
4. Open the iris control gradually and confirm that the white level of the video signal is 330 mV when the "LOW LIGHT" indication disappears. If the specification is not met, repeat step 3.

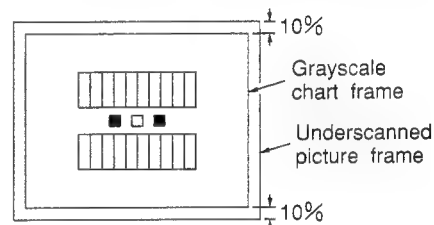
#### 3-7-2. ABL Adjustment

**Object:** Grayscale chart  
**Equipment:** Waveform monitor  
**Preparation:** Set the WB selector on the side of the camera to PRE.

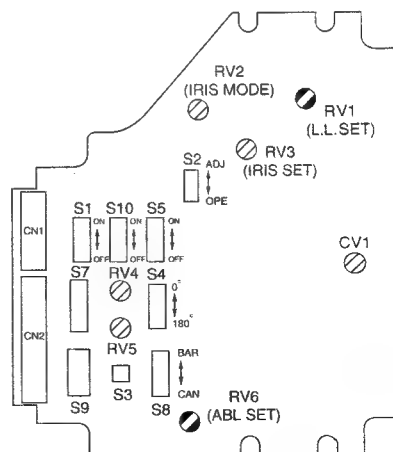
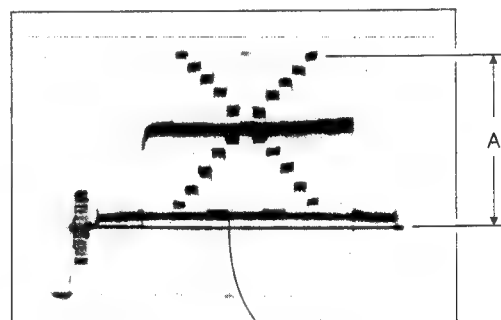
**Adjustment point:** RV6/AT-63 board

**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame is underscanned 10% from the underscanned frame on the monitor.



2. Adjust the iris control so that the white level "A" of the grayscale chart is  $700 \pm 15$  mV.
3. Adjust RV6/AT-63 board so that the black level of the grayscale chart does not change when changing over the ABL switch to ON or OFF.



AT-63 BOARD (COMPONENT SIDE)

### 3-7-3. Auto Iris Adjustment

**Object:** Grayscale chart

**Equipment:** Waveform monitor

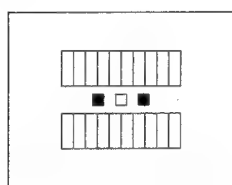
**Preparation:** Set the WB selector on the side of the camera to PRE.

Set the iris control to AUTO.

●RV2 (IRIS MODE)/AT-63 board fully clockwise ○.

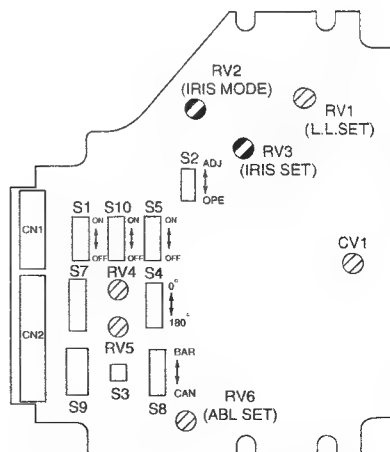
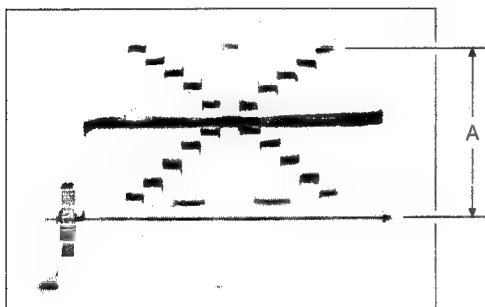
**Adjustment:**

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



(Monitor Screen)

2. Adjust ●RV3 (IRIS SET)/AT-63 board so that the white peak level "A" of the grayscale chart is  $600 \pm 10$  mV.
3. Adjust ●RV2 (IRIS MODE)/AT-63 board so that the white peak level "A" of the grayscale chart is  $700 \pm 10$  mV.



AT-63 BOARD (COMPONENT SIDE)

**DXK-327/327P**



## General

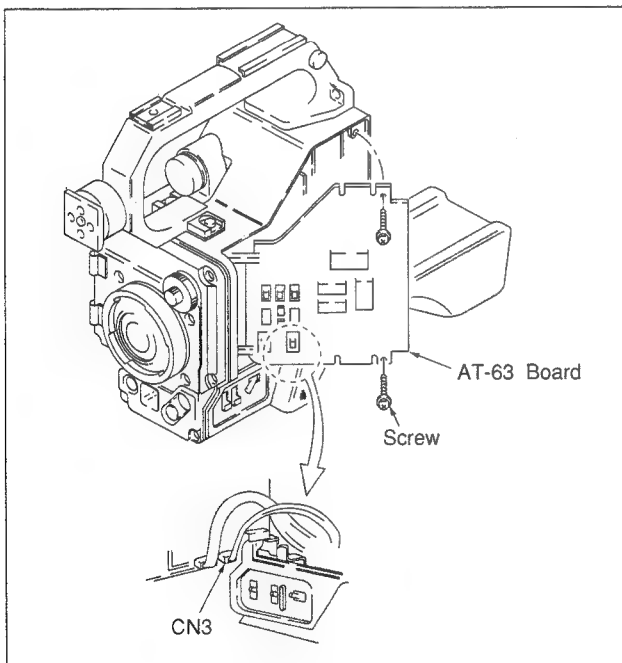
The DXK-327/327P is a kit for modification of the DXC-327/327P color video camera and is composed of an EN-103 board, SG-171 board, MB-413 board, a shoulder pad, and a connector panel for CA-537/537P. Incorporation of DXK-327/327P allows the output of component signals from the DXC-327/327P and enables connection with the BETA-CAM SP2000PRO series video cassette recorder PVV-1/1P.

It also enables connection with the camera adaptors CA-537/537P and CA-511.

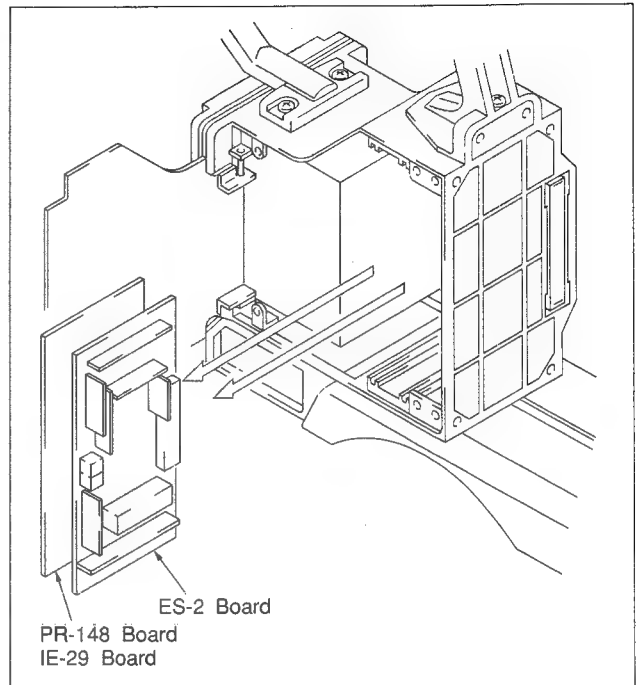
For the circuit diagrams of boards and block diagrams, and the table of repair parts, please refer to the DXC-327A/327AP Service Manual.

### Incorporation into DXC-327/DXC-327P

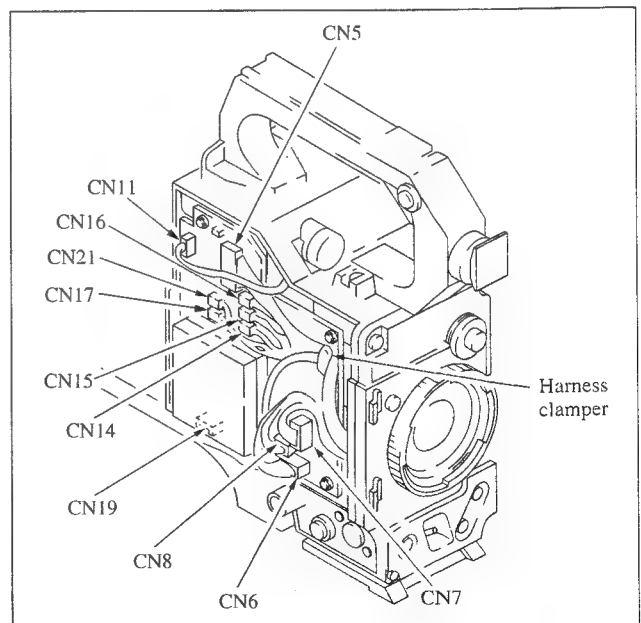
1. Remove the covers on both sides by referring to the "CABINET REMOVAL" section of DXC-327A/327AP Service Manual.
2. Remove the two screws, open the AT-63 board, and then disconnect the CN3 connector.



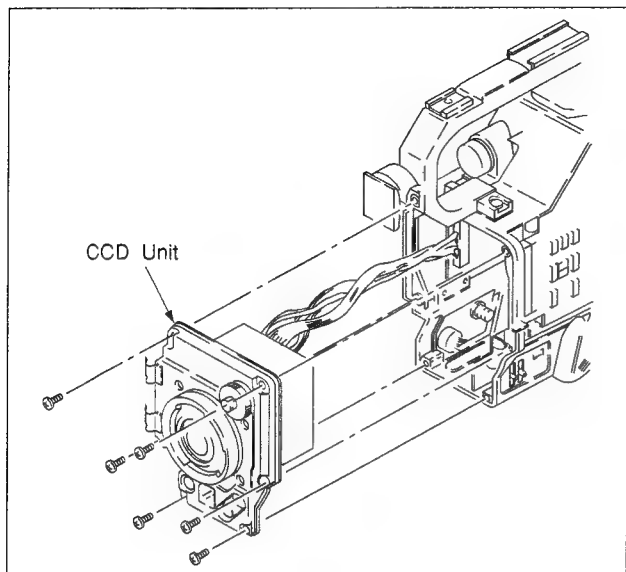
3. Pull out the PR-148 board, IE-29 board, and the ES-2 board.



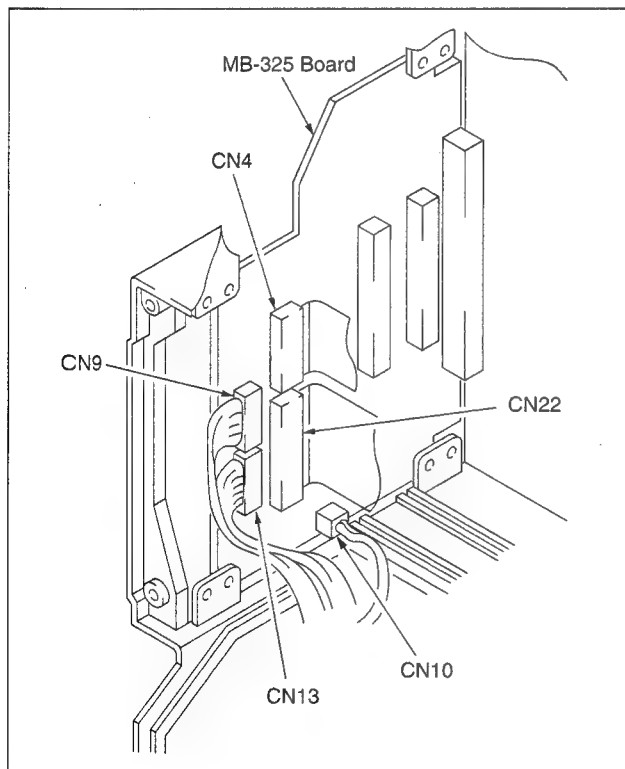
4. Disconnect the eleven connectors: CN5, 6, 7, 8, 11, 14, 15, 16, 17, 19, and 21, which are located outside the MB-325 board. Remove the harness from the harness clumper.



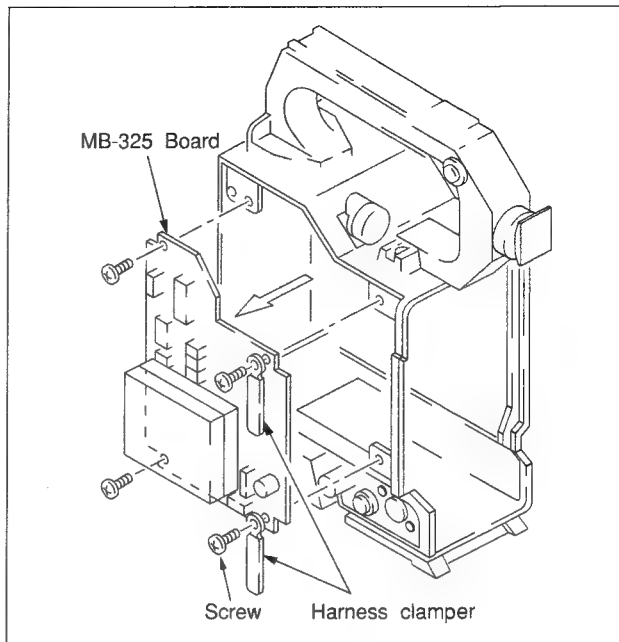
5. Unscrew the six screws on the front panel and pull out the entire CCD unit.



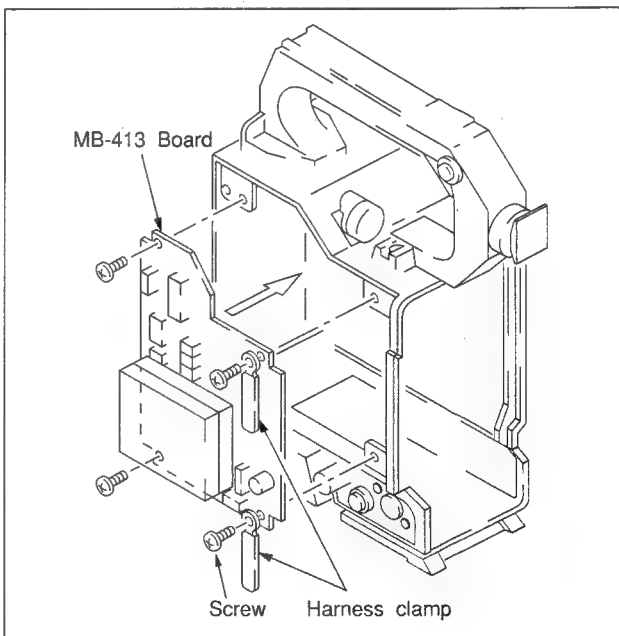
6. Disconnect the five connectors: CN4, 9, 10, 13, and 22, which are located inside the MB-325 board.



7. Unscrew the four screws and remove the MB-325 board.



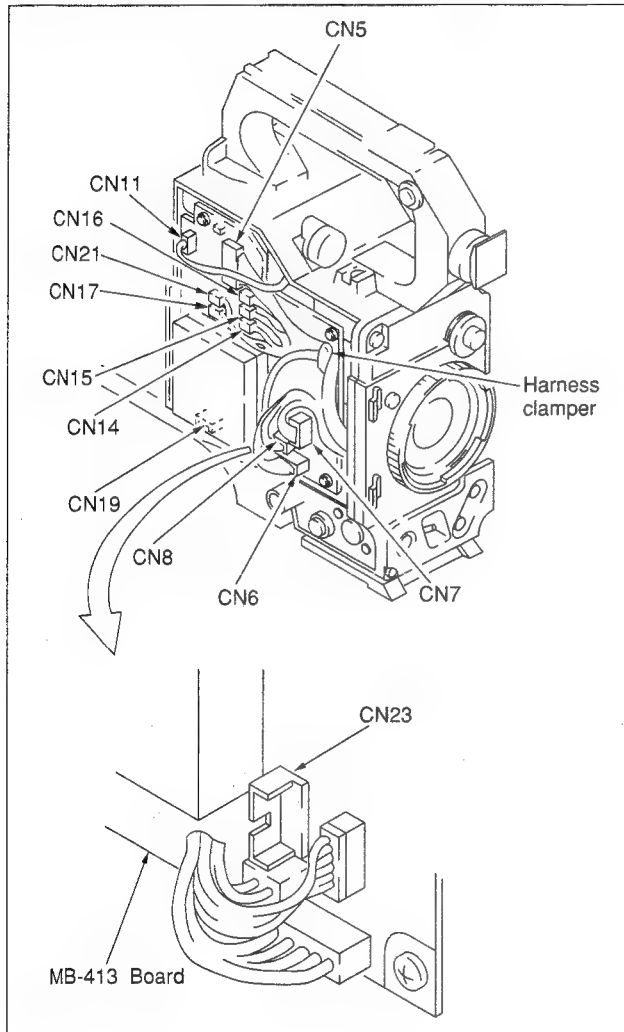
8. Hold the MB-413 board in place using the four screws while simultaneously tightening the harness clasper.



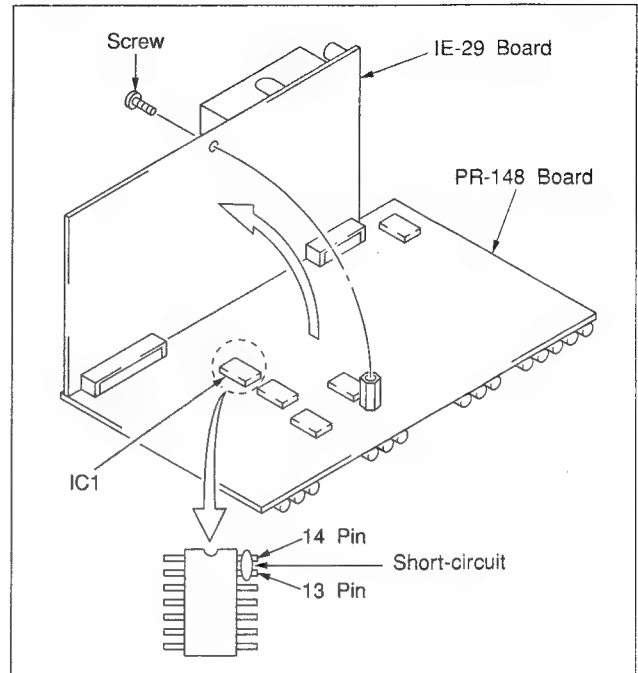
9. Connect the five connectors (CN4, 9, 10, 13, and 22) of the MB-413 board by performing steps 5 and 6 in reverse order and then mount the CCD unit on the main body.

10. Connect the connectors as they were originally and then hold the harness firmly with the harness clamber.

**Note:** There is no connector to the CN23 on the replaced MB-413 board.

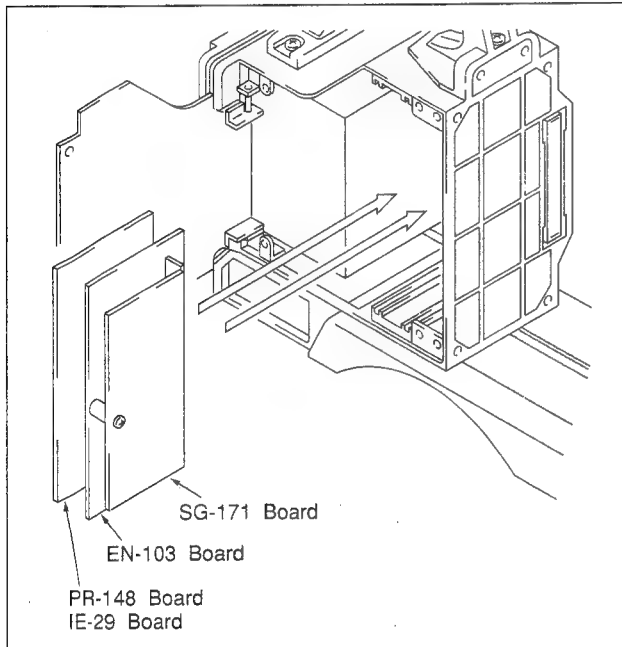


11. Unscrew the screw and then open the IE-29 board in the direction of the arrow. Short-circuit pins 13 and 14 of IC1 on the PR-148 board by soldering.

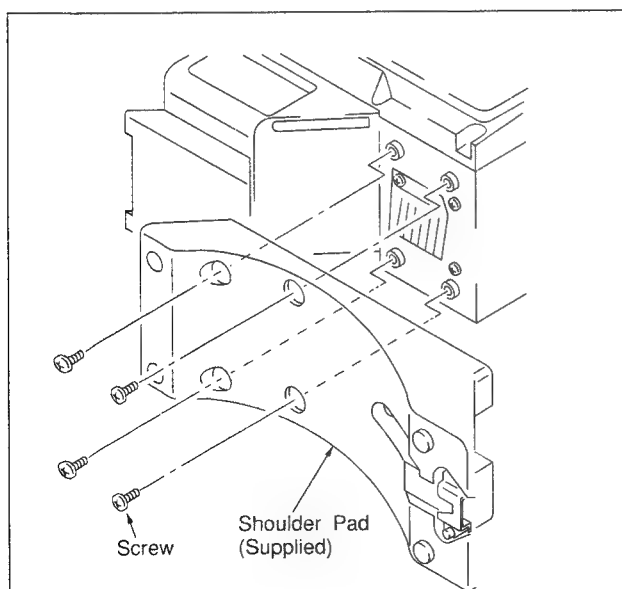


12. Insert the PR-148 board, IE-29 board, EN-103 board, and SG-171 board.

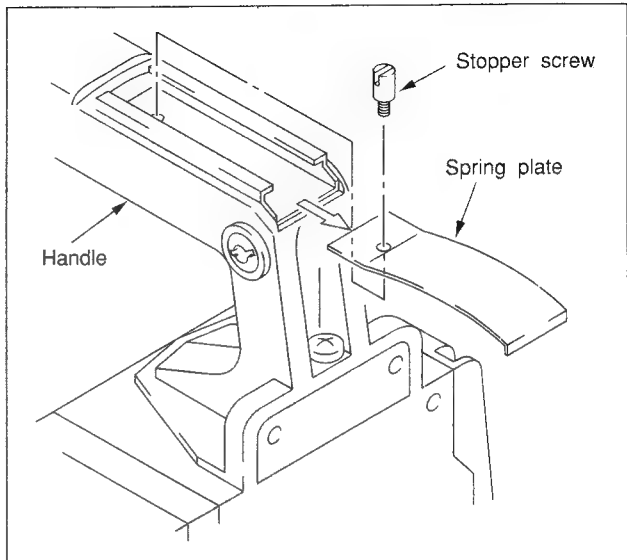
**Note:** Adjust the EN-103 board and the SG-171 board in advance by referring to the "ALIGNMENT" section of the DXC-327A/327AP Service Manual.  
Readjust the PR-148 board by referring to the "ALIGNMENT" section of PR-167 board of DXC-327A/AP Service Manual.



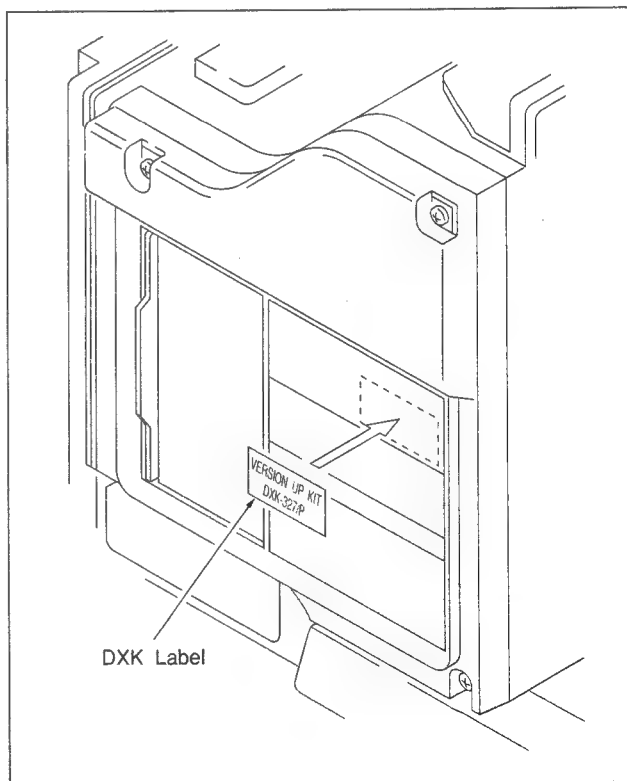
13. Unscrew the four screws, remove the shoulder pad, and then mount the shoulder pad that is supplied with the DXK-327/327P.



14. Remove the stopper screw and the spring plate.



15. Attach the both side covers and then stick the DXK label on the right side cover.

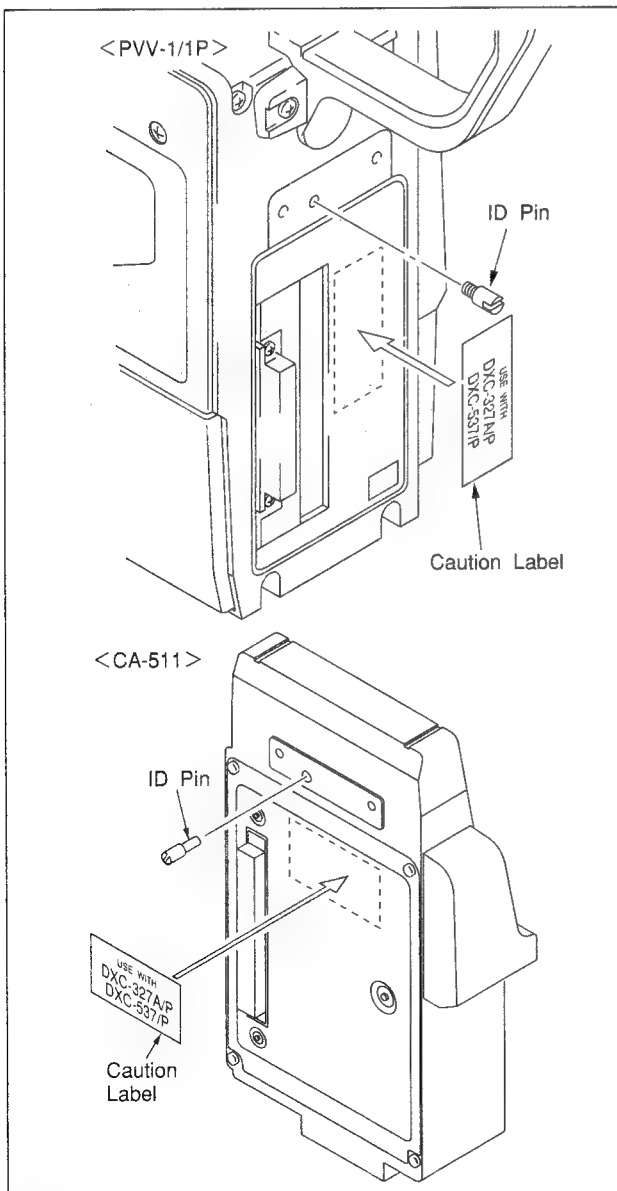


## Modification of PVV-1/1P, CA-537/537P, and CA-511

PVV-1/1P, CA-537/537P, and CA-511 are provided with ID pins to prevent improper connection with cameras which do not have component outputs. If a modified DXC-327/327P with the DXK-327/327P is connected with one of the models mentioned above, this ID pin must be removed. PVV-1/1P, CA-537/537P, and CA-511 all have the ID pin removed and they can be connected with a camera which does not have component output, but they do not function properly.

### Modification of PVV-1/1P and CA-511

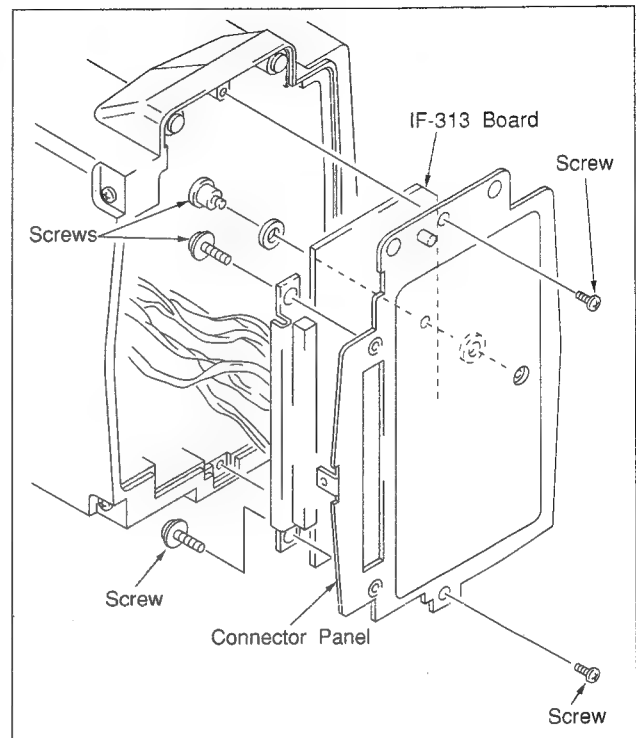
Remove the ID pin by using a screwdriver and then stick a caution label.



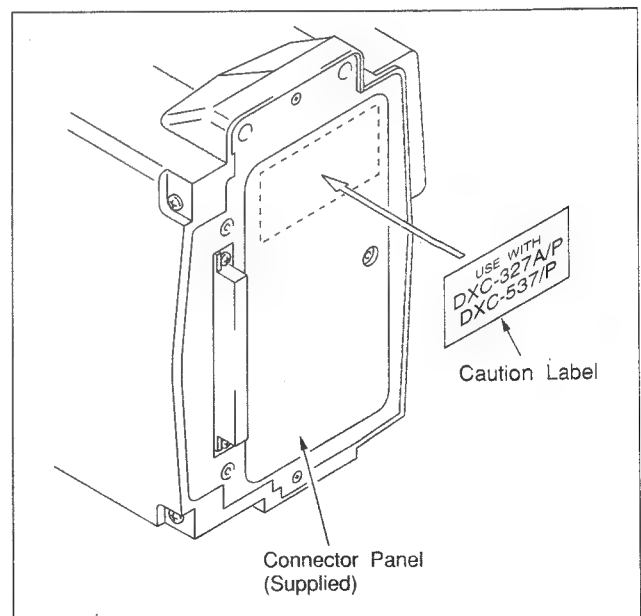
DXK-327 (UC)  
DXK-327P (EK)

### Modification of CA-537/537P

1. Unscrew the two screws, remove the connector panel, and then unscrew the three screws that hold the IF-313 board.



2. Attach the connector panel that is supplied with DXK-327/327P and then stick a caution label.



COLOR VIDEO CAMERA  
CAMERA ADAPTOR  
1.5INCH ELECTRONIC VIEWFINDER  
ZOOM LENS



SONY - SP0203


**DXC-327**  
**CA-327**  
**DXF-501**  
**VCL-712BX**

**VOL. 2**  
**BLOCK DIAGRAMS**  
**SEMICONDUCTORS**  
**SCHEMATIC DIAGRAMS**  
**BOARD ILLUSTRATIONS**  
**SPARE PARTS**



**SONY®**  
**SERVICE MANUAL**

#### **SAFETY RELATED COMPONENT WARNING**

Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

**Warning**—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC rules.

#### **For the customers in Canada**

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

#### **Pour les utilisateurs au Canada**

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

## COLOR VIDEO CAMERA



### SPECIFICATIONS

#### Camera head (DXC-327/327P)

Image device	Interline-transfer CCD, 3-chip	Sync system	Internal
Picture elements	768 × 494 (h/v) (NTSC) 752 × 582 (h/v) (PAL)		External with the BS or VBS signal supplied to the GEN LOCK IN connector (When the CA-327/327P, CA-325/325P, CA-325A/325AP or CA-325B is used) or the reference signal input to the VTR/CCU/CMA connector from the GEN LOCK IN connector of the CCU-M3/M3P (When the CA-327/327P or CA-325/325 is used)
Sensing area	6.4 mm × 4.8 mm (equivalent to a 1/2-inch pickup tube)	Horizontal resolution	700 lines (center)
Built-in filters	1: 3200 K 2: 5600 K + 1/8 ND 3: 5600 K	Minimum illumination	20 lux with F1.4, + 18 dB
Lens mount	Bayonet mount	Sensitivity	2000 lux with F5.0, at 3200 K
Signal system	EIA standards, NTSC color system (for DXC-327) CCIR standards, PAL color system (for DXC-327P)	Gain selection	0 dB, 9 dB or 18 dB, selectable
Scanning system	525 lines, 2:1 interlace, 30 frames/sec. (NTSC) 625 lines, 2:1 interlace, 25 frames/sec. (PAL)	Video output	Composite signal: 1.0 Vp-p, sync negative, 75 Ω unbalanced Y/C separate signal: Y: 1.0 Vp-p, sync negative, unbalanced C: burst level 0.286 Vp-p (NTSC) 0.3 Vp-p (PAL)
Scanning frequency	Horizontal: 15.734 kHz (NTSC) 15.625 kHz (PAL) Vertical: 59.94 Hz (NTSC) 50.00 Hz (PAL)	Signal to noise ratio	without sync 60 dB (NTSC) 58 dB (PAL)
		Registration	0.05 % for Zone I 0.05 % for Zone II 0.05 % for Zone III

**SONY®**  
**SERVICE MANUAL**



Inputs/Outputs VIDEO OUT: BNC-type  
 LENS: 1/2-inch lens connector (7-pin)  
 2/3-inch lens connector (6-pin)  
 VF: 8-pin  
 REMOTE: 10-pin

Power requirements  
 12 V DC

Power consumption  
 8 W

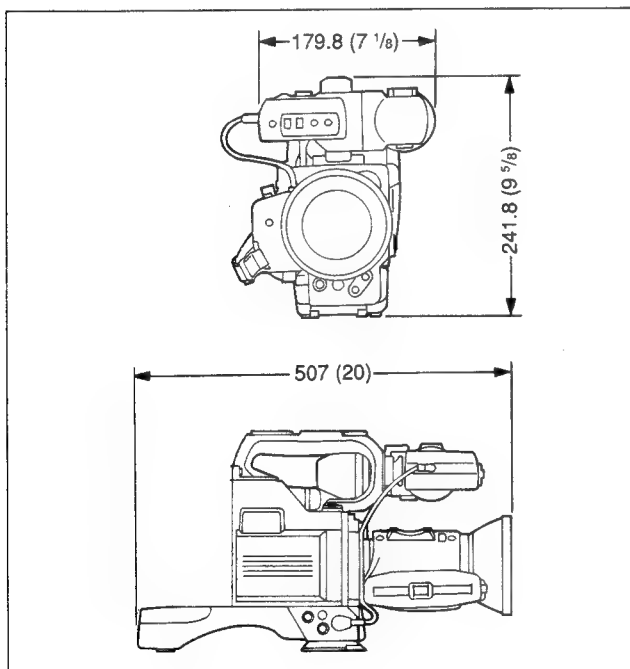
Operating temperature  
 -5°C to +45°C (23°F to 113°F)

Storage temperature  
 -20°C to +60°C (-4°F to 140°F)

Weight  
 2 kg (4 lb 7 oz)

Dimensions  
 See the illustrations below.  
 Unit: mm (inches)

## Dimensions



## Carrying case (LC-420)

Weight About 7.7 kg (15 lb 7 oz)  
 Dimensions About 790 × 440 × 340 mm (w/h/d)  
 (31 1/8 × 17 3/8 × 13 1/2 inches)

## Accessories supplied

CCQ-2BRS camera cable (with Q-type 14-pin connectors)  
 (supplied with the DXC-327K/327PK/327L/327PL only)  
 (1)

VCL-712BX zoom lens (supplied with the DXC-327K/327PK  
 only) (1)

DXF-327/327CE electronic viewfinder (supplied with the  
 DXC-327K/327PK/327L/327PL only) (1)

LC-420 carrying case (supplied with the DXC-327K/327PK/  
 327L/327PL only) (1)

VCT-12 tripod attachment (supplied with the DXC-327K/  
 327PK/327L/327PL only) (1)

Lens cap (1)

Chart for flange focal length adjustment (1)

Design and specifications are subject to change without notice.

# TABLE OF CONTENTS






## A. BLOCK DIAGRAMS

Overall .....	A-1
CCD Block Diagram.....	A-4
IE-29 Block Diagram.....	A-7
PR-148 Block Diagram.....	A-9
ES-2 Block Diagram .....	A-11
AT-63 Block Diagram .....	A-13

## B. SEMICONDUCTOR

Semiconductor .....	B-1
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## C. SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS

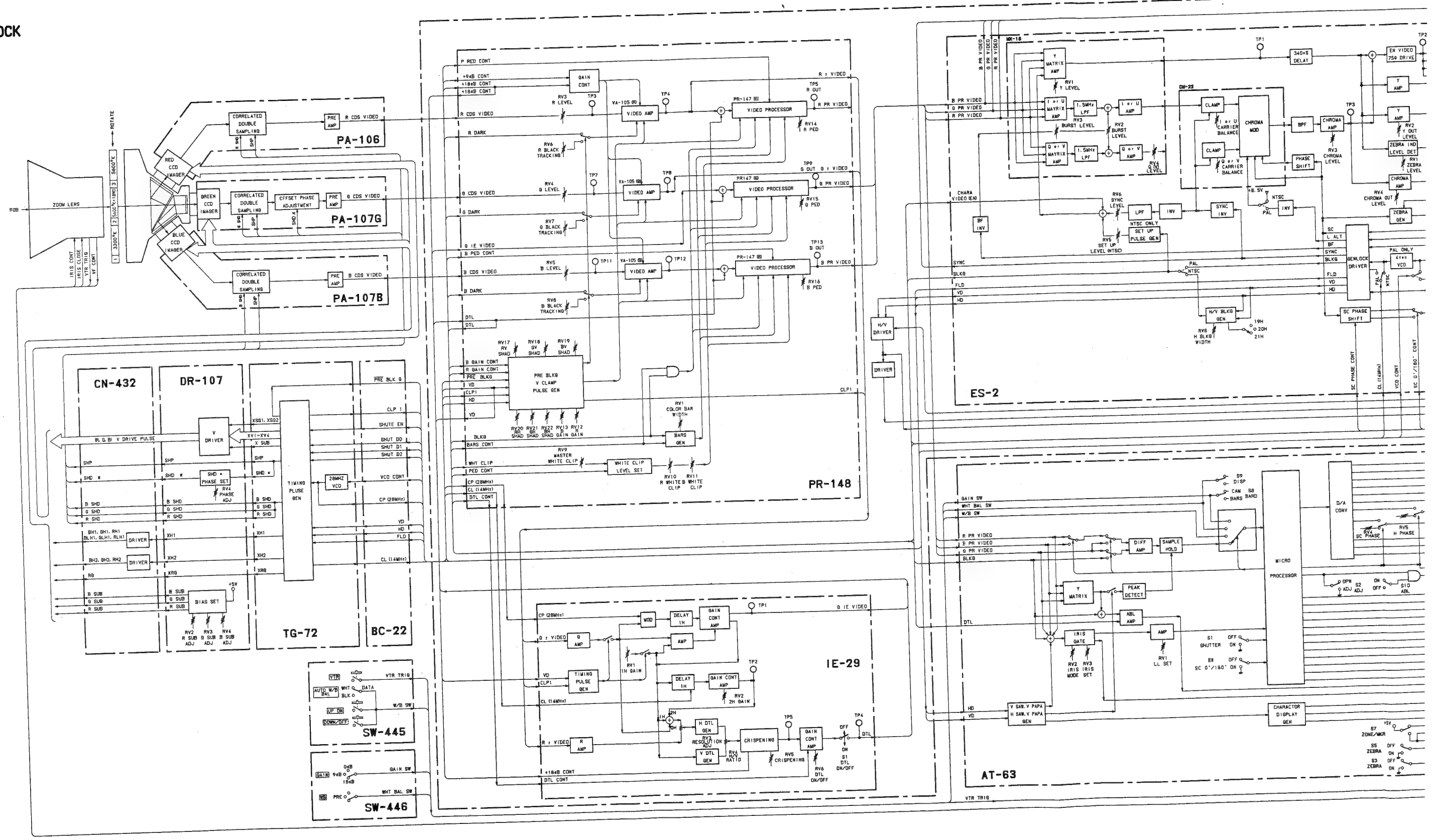
BC-22		.....C-3
DR-107		
TG-72		
CN-432		.....C-9
PA-106		
PA-107G		
PA-107B		
IE-29 .....		C-13
PR-147		.....C-22
VA-105R/G/B		
PR-148		
ES-2		
BKG-4		.....C-34
CM-22		
MX-18		
AT-63.....		C-47
MB-325		.....C-54
SW-445		
SW-446		

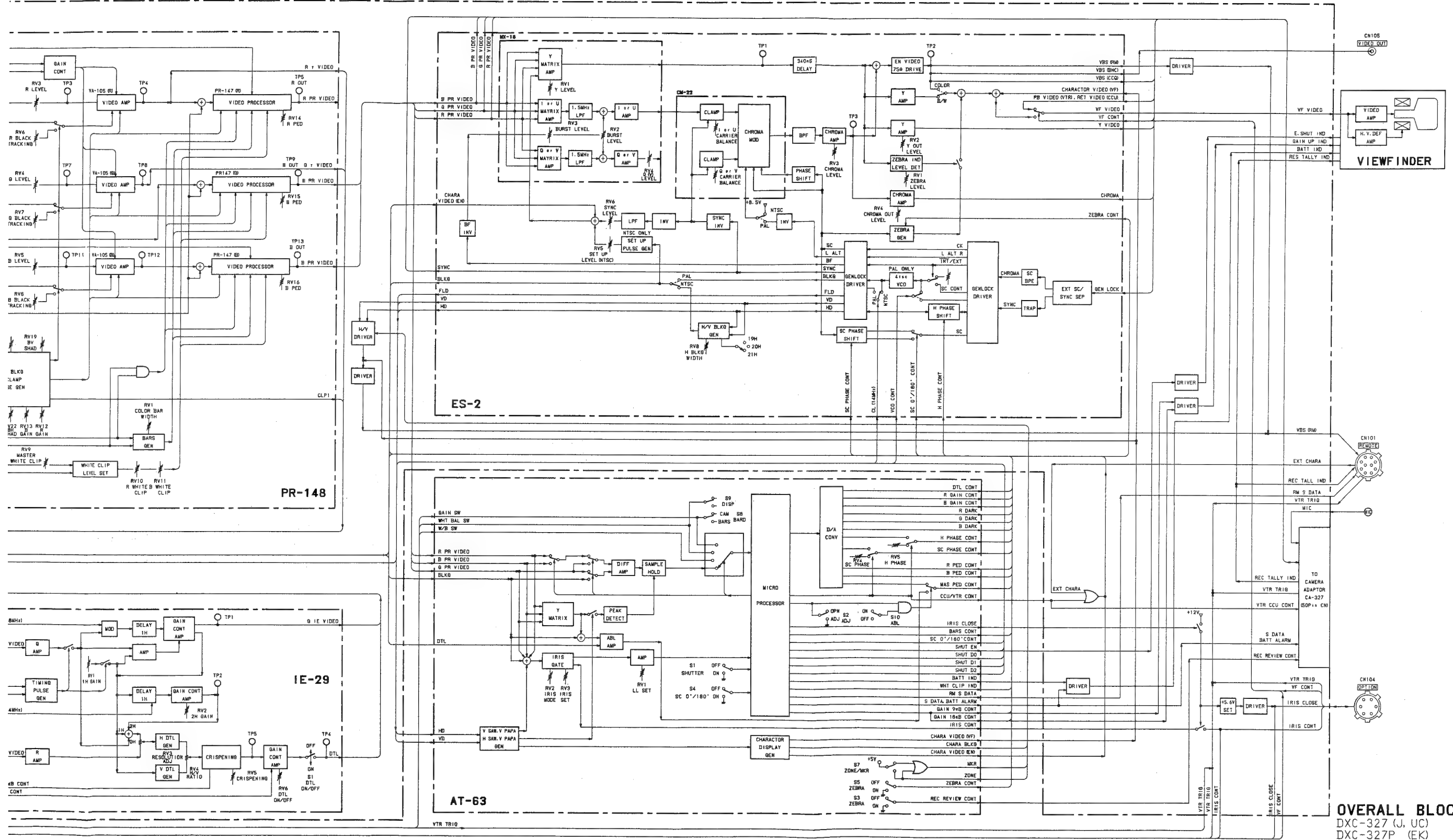
## D. SPARE PARTS

Parts Information .....	D-1
CCD Block.....	D-3
Chassis (1) Block.....	D-5
Chassis (2) Block.....	D-9
Packing Material and Accessories .....	D-11
Electrical Parts .....	D-13

SECTION A  
BLOCK DIAGRAMS

OVERALL BLOCK





OVERALL BLOCK  
DXC-327 (J, UC)  
DXC-327P (EK)

1  
2  
3  
4  
5  
6

A-2

A-3

B-DXC327-OVERALL BLOCK/M

D

E

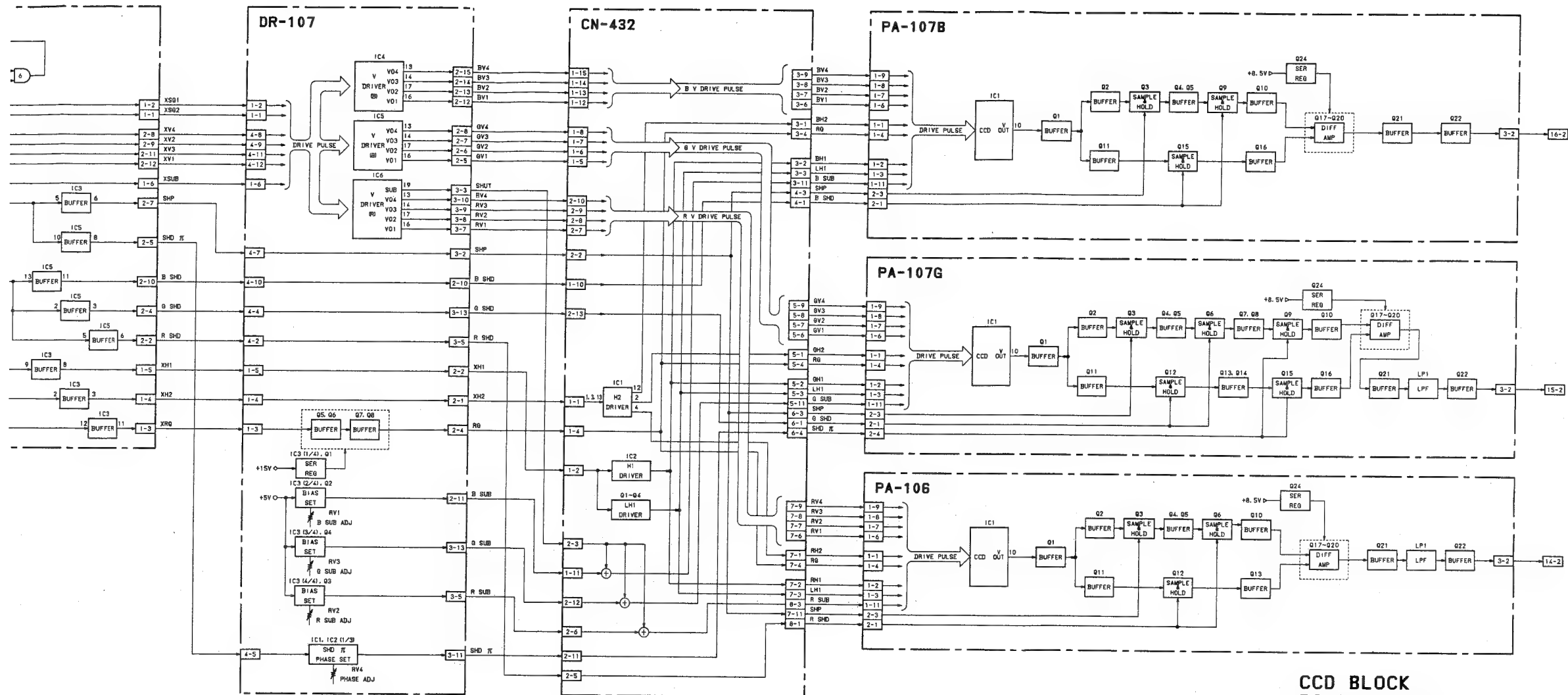
F

G

H

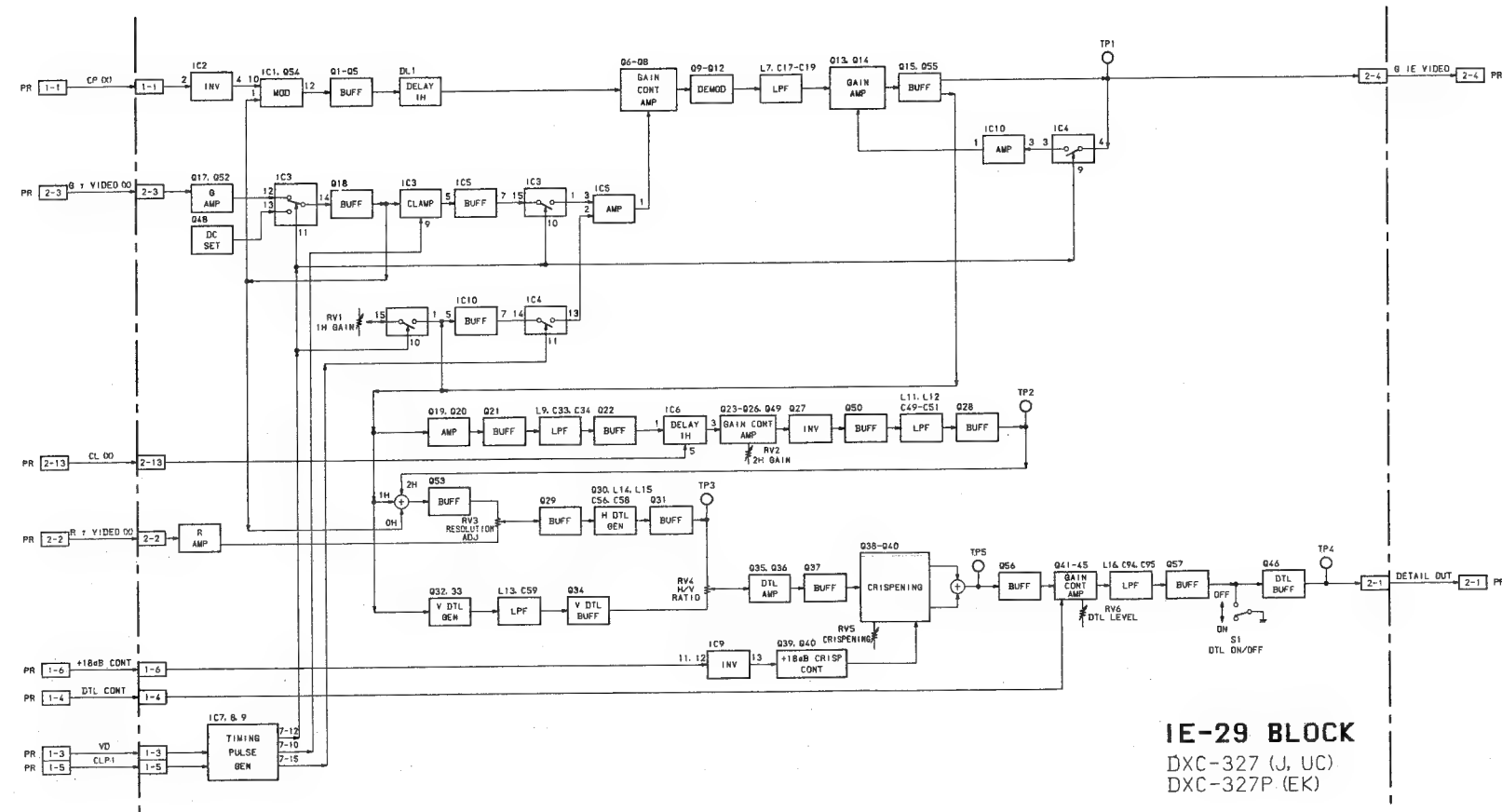
I





CCD BLOCK  
 BC-22 BLOCK  
 TG-72 BLOCK  
 DR-107 BLOCK  
 CN-432 BLOCK  
 PR-107B/107G/106 BLOCK  
 DXC-327 (J, UC)  
 DXC-327P (EK)

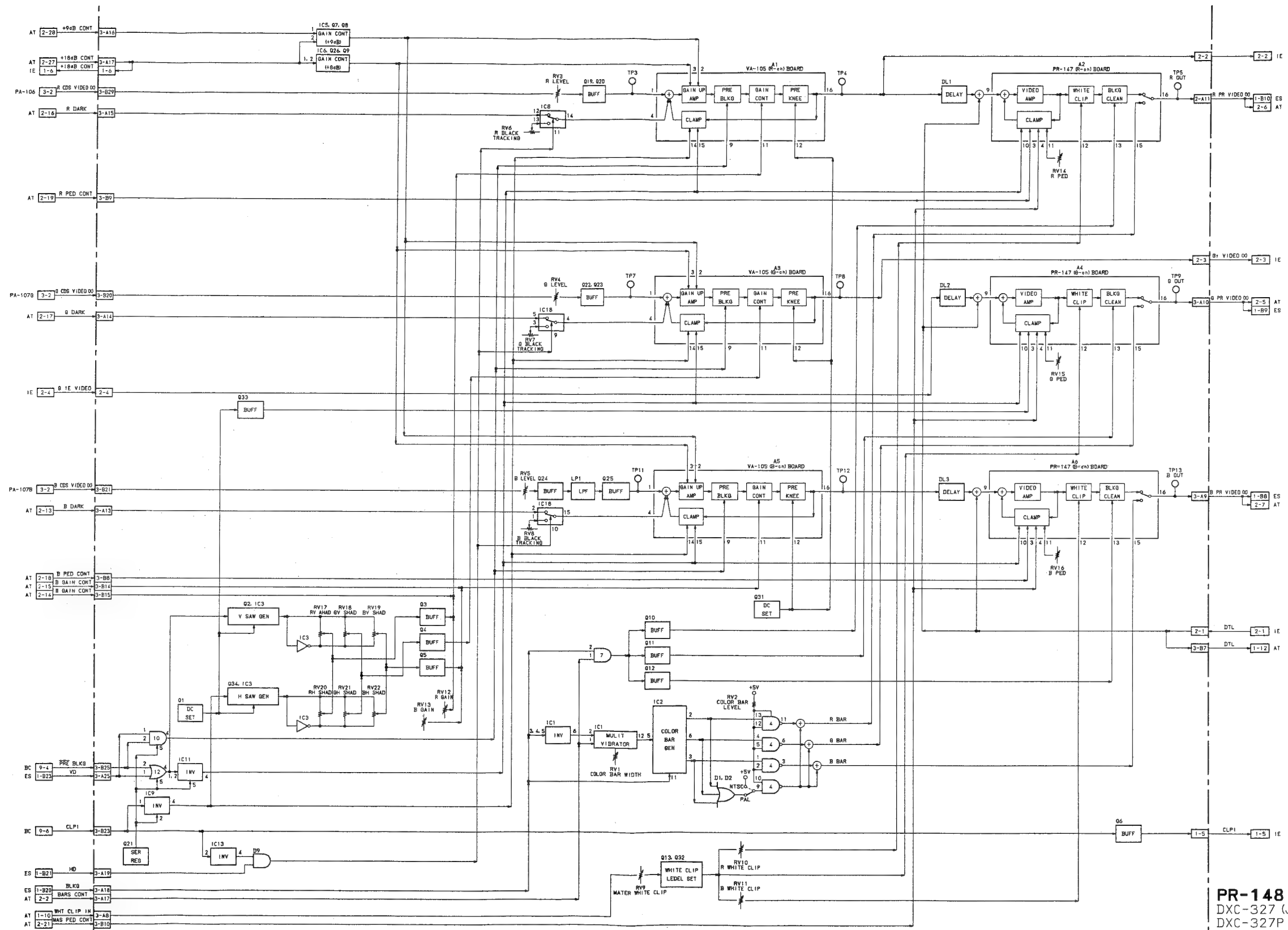
IE-29 BLOCK



PR-148 BLOCK

PR-148 BLOCK

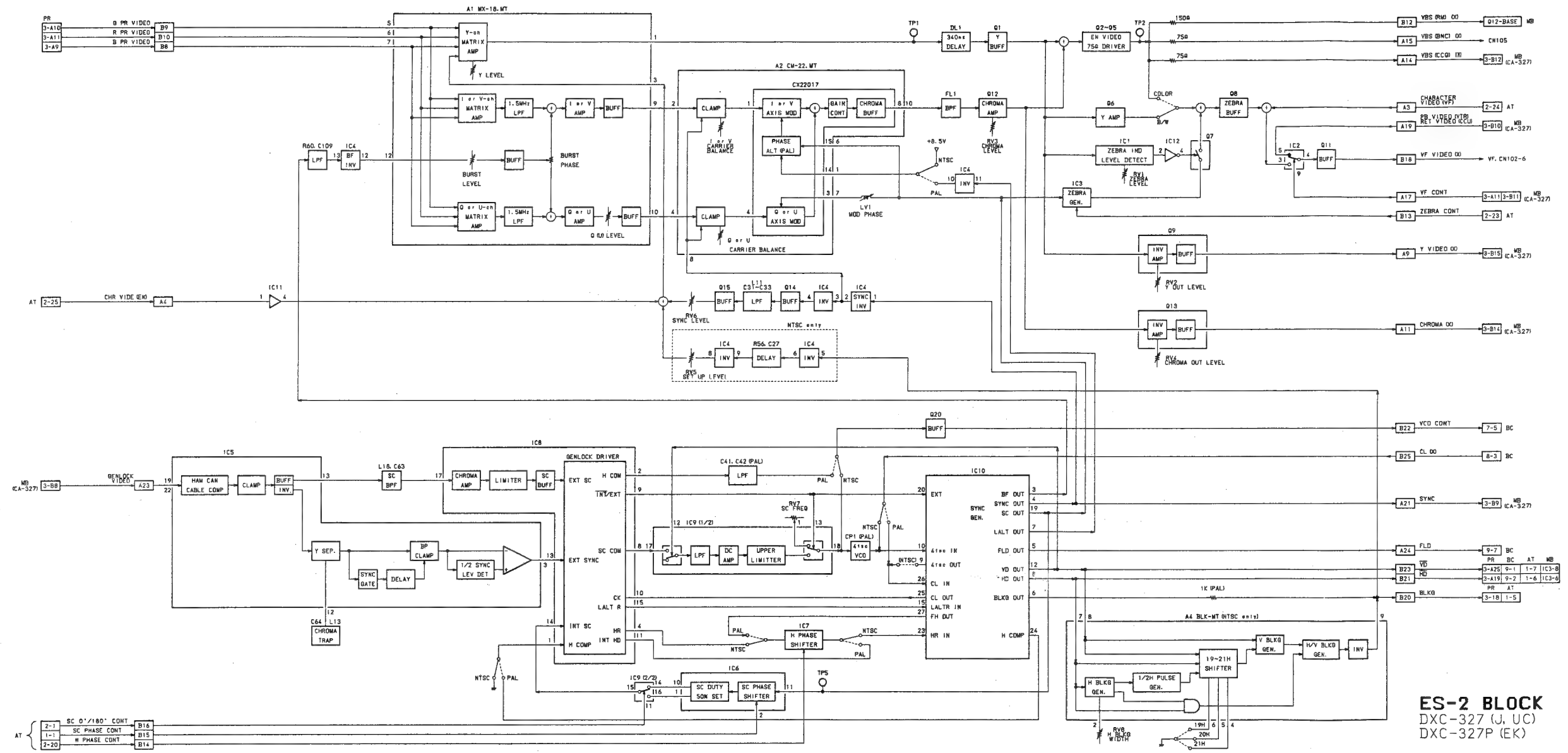
PR-148 BLOCK



PR-148 BLOCK  
DXC-327 (J, UC)  
DXC-327P (EK)

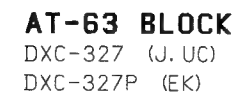


ES-2 BLOCK

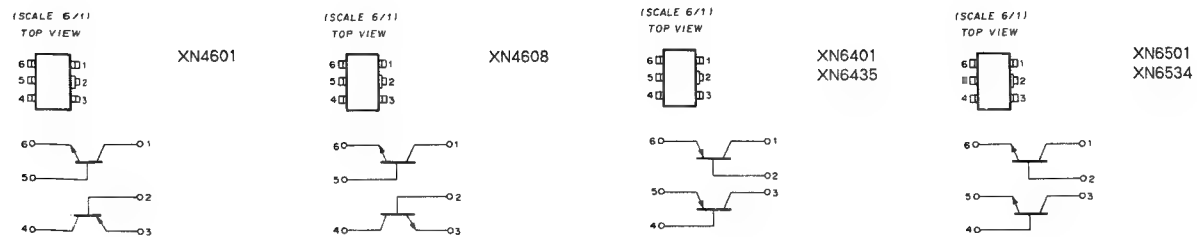
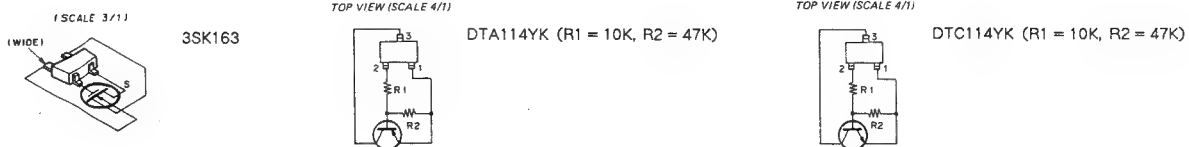
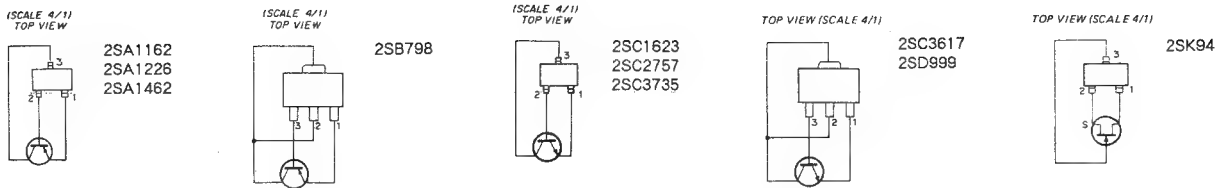
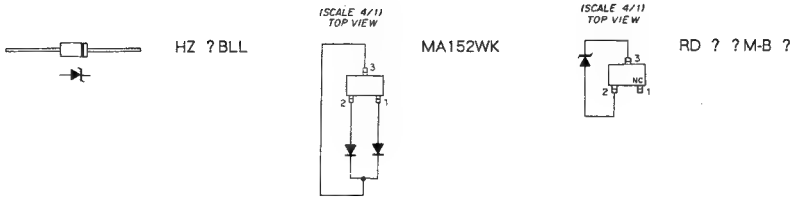
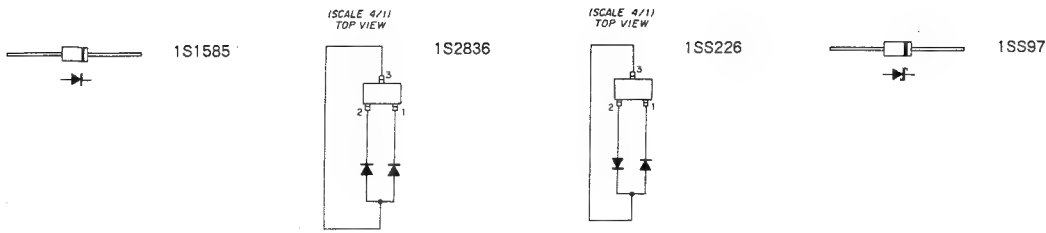


## 3

AT-63 BLOCK



# DIODE, TRANSISTOR



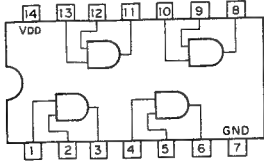
## SECTION B

### SEMICONDUCTOR

The circuit diagram of IC is obtained from the IC data book published by the manufacturer.

TYPE	PAGE	TYPE	PAGE
1S1585 .....	B-2	SN74HC02NS .....	B-9
1S2836 .....	B-2	SN74HC04NS .....	B-9
1SS226 .....	B-2	SN74HC08NS .....	B-3
1SS97 .....	B-2	SN74HC174NS .....	B-10
		SN74HC27NS .....	B-10
2SA1162 .....	B-2	SN74LS221NS .....	B-10
2SA1226 .....	B-2		
2SA1462 .....	B-2	TC4069UBF .....	B-8
2SB798 .....	B-2	TC40H000F .....	B-10
		TC40H027F .....	B-10
2SC1623 .....	B-2	TC40H076AF .....	B-10
2SC2757 .....	B-2	TC40H193F .....	B-11
2SC3617 .....	B-2		
2SC3735 .....	B-2	TC4S01F .....	B-11
		TC4S11F .....	B-11
2SD999 .....	B-2	TC4S30F .....	B-11
		TC4S71F .....	B-11
2SK94 .....	B-2	TC4S81F .....	B-9
3SK163 .....	B-2	TC4SU69F .....	B-11
74AC08SJ .....	B-3	TC74AC04F .....	B-9
		TL062CPS .....	B-9
BX1340 .....	B-3	TL064CNS .....	B-11
		TL082CPS .....	B-12
CX22017 .....	B-3		
CXD1217M .....	B-3	uPC311G2 .....	B-12
CXD1250M .....	B-4	uPC324G2 .....	B-12
CXD1255Q .....	B-5	uPD6142G-101 .....	B-12
CXD8095Q .....	B-6		
CXD8154M .....	B-7	XN4601 .....	B-2
CXL5504M .....	B-7	XN4608 .....	B-2
		XN6401 .....	B-2
DTA114YK .....	B-2	XN6435 .....	B-2
DTC114YK .....	B-2	XN6501 .....	B-2
		XN6534 .....	B-2
HZ ? BLL .....	B-2		
LM2903M .....	B-7		
M6M80011L .....	B-7		
MA152WK .....	B-2		
MB88342PF .....	B-8		
MC14001BF .....	B-8		
MC14051BF .....	B-8		
MC14053BF .....	B-8		
MC14069UBF .....	B-8		
MC14557BF .....	B-8		
NJM062M .....	B-9		
NJM319M .....	B-9		
RC1496M .....	B-9		
RD ? ?M-B ? .....	B-2		
SC14S81F .....	B-9		
SC7SU04F .....	B-9		

74AC08SJ (NS) FLAT PACKAGE  
SN74HC08NS (TI) FLAT PACKAGE  
C-MOS QUAD 2-INPUT AND GATE  
- TOP VIEW -



NOTE:

TYPE	V <sub>DD</sub>
TC74AC08F	+2 to +5.5V
OTHER TYPES	+2 to +6V

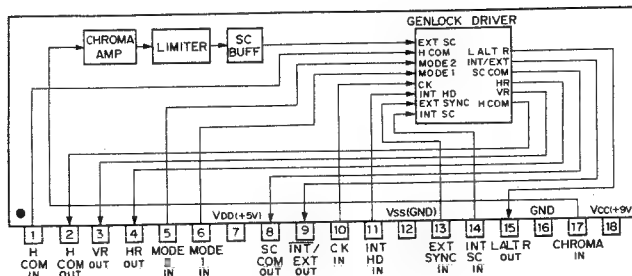
$$A \text{ --- } B \text{ --- } Y = A \cdot B$$

$$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$$

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0: LOW LEVEL  
1: HIGH LEVEL

BX1340 (SONY)  
SC LIMITER AND GENLOCK DRIVER  
- REAR VIEW -

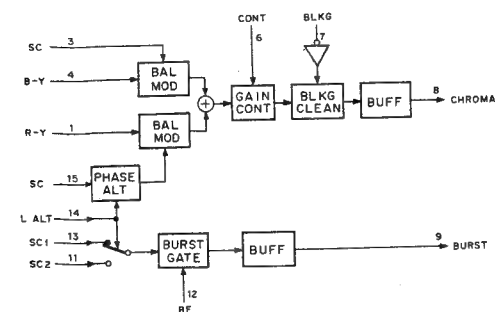
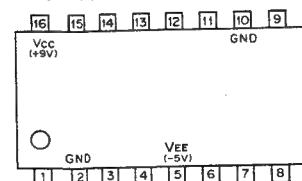


MODE SELECTION

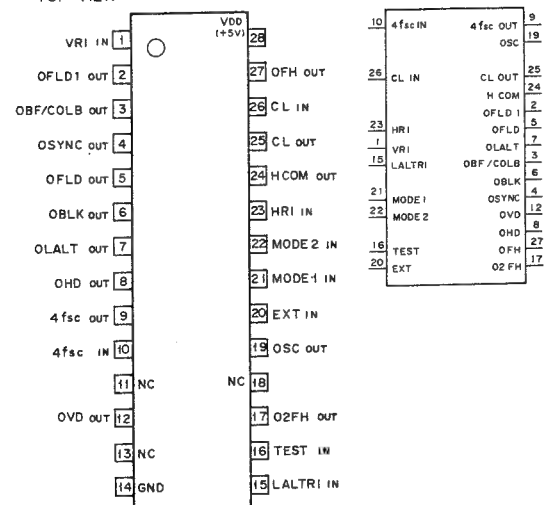
MODE 1	MODE 2	MODE
1	1	NTSC
0	0	PAL

0: LOW LEVEL  
1: HIGH LEVEL

CX22017 (SONY)  
VIDEO SIGNAL PROCESSOR  
- TOP VIEW -



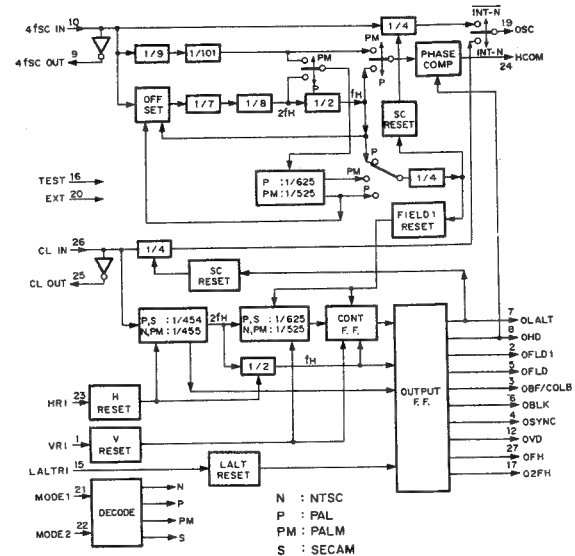
CXD1217M (SONY) FLAT PACKAGE  
C-MOS SYNC GENERATOR  
- TOP VIEW -



SYSTEM	4fsc	CLOCK
NTSC	910fh	910fh
PAL	1135fh+2fv	908fh
PALM	909fh	910fh
SECAM	—	908fh

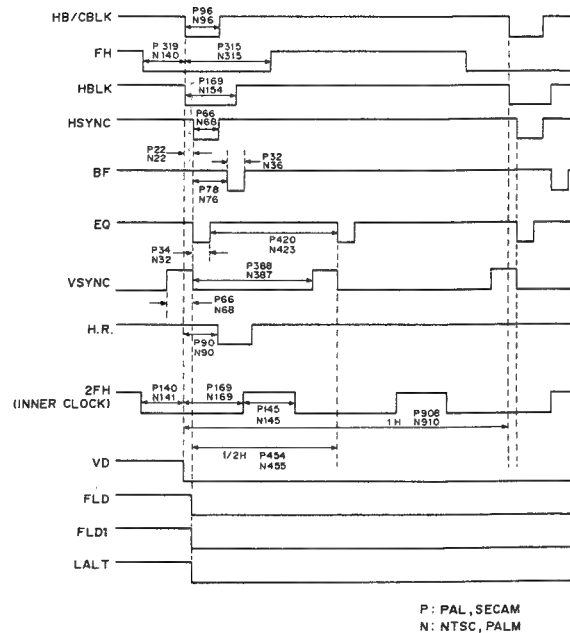
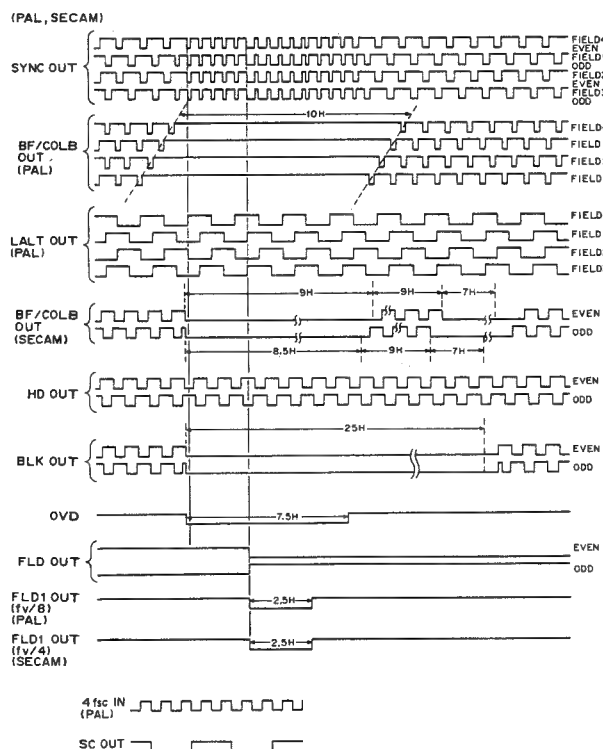
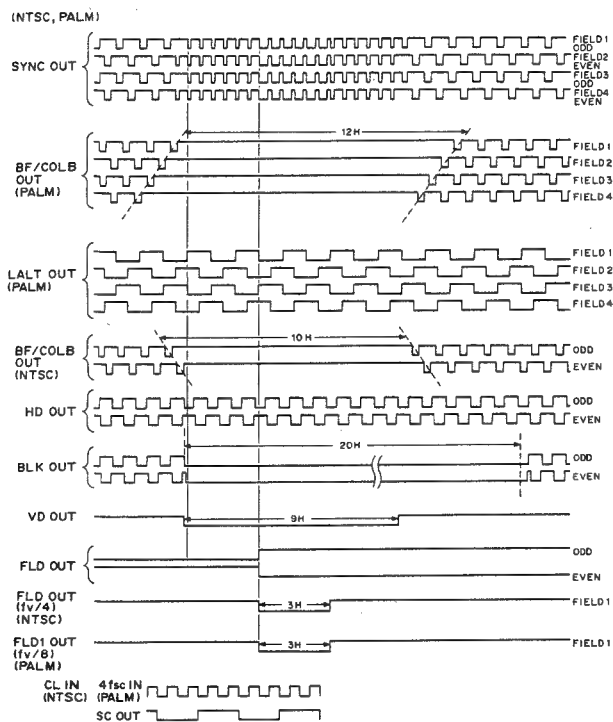
INPUT	MODE1	MODE2	SYSTEM
0	0	0	NTSC
0	1	0	SECAM
1	0	0	PALM
1	1	1	PAL

0: LOW LEVEL  
1: HIGH LEVEL

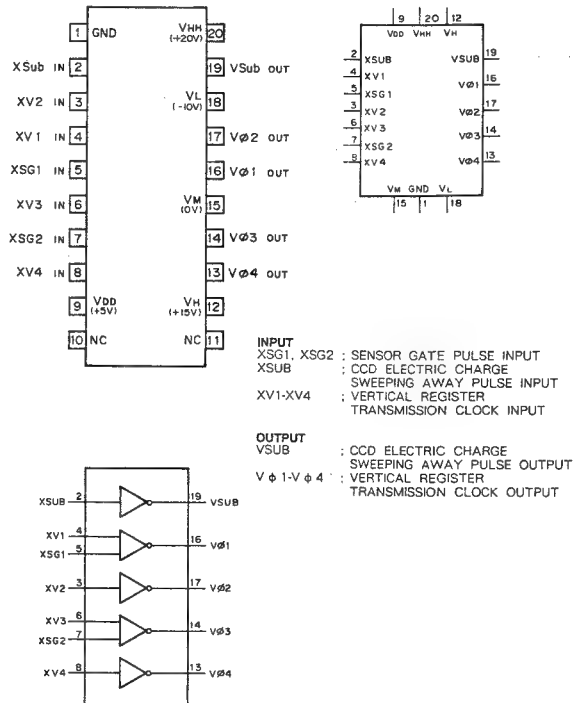


INPUT  
4fsc IN : 4fsc INPUT  
CL IN : CLOCK INPUT  
EXT : SYNC MODE SELECT  
(L: INTERNAL/H: EXTERNAL)  
HRI : H RESET  
LALTRI : LINE CHANGE RESET  
MODE 1,2 : SYSTEM SELECT  
VRI : V RESET

OUTPUT  
4fsc OUT : 4fsc OUTPUT  
CL OUT : CLOCK OUTPUT  
HCOM : PHASE COMPARATOR  
O2fh : 2fh OUTPUT  
OBF/COLB : BURST FLAG/COLOR BLANKING  
OBLK : COMPOSITE BLANKING  
OFH : H FREQUENCY  
OFLD : EVEN, ODD  
OFLD1 : FIELD1  
OHD : H DRIVE  
OLALT : LINE CHANGE  
OSC : SUBCARRIER  
OSYNC : COMPOSITE SYNC  
OVD : V DRIVE



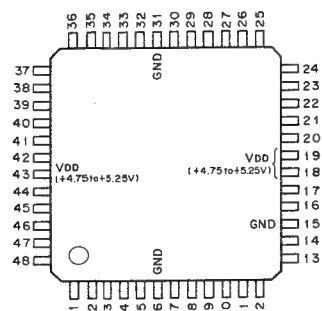
CXD1250M (SONY) FLAT PACKAGE  
CMOS VERTICAL CLOCK DRIVER FOR CCD  
- TOP VIEW -



## CXD1255Q (SONY) FLAT PACKAGE

CMOS SCANNING SYSTEM TIMING SIGNAL GENERATOR FOR CCD CAMERA

- TOP VIEW -



PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	SP1	13	I	FL	25	I	D0	37	I	TEST2
2	O	SHD	14	O	VAA	26	I	MODE3	38	O	PBLK
3	O	SHP	15	-	GND	27	I	MODE2	39	O	ID
4	O	XV4	16	O	XH2	28	I	MODE1	40	O	CLP3
5	O	XV2	17	O	XH1	29	I	OSCI	41	O	CLP2
6	-	GND	18	-	VDD	30	O	OSCO	42	O	CLP1
7	I	TEST1	19	-	VDD	31	-	GND	43	-	VDD
8	O	XV3	20	I	MODE4	32	I	CK	44	O	XDL2
9	O	XV1	21	O	XSUB	33	O	XCK	45	O	XDL1
10	O	XSG2	22	I	EN	34	I	VD	46	I	MODE6
11	O	XSG1	23	I	D2	35	I	HD	47	I	MODE5
12	O	XRG	24	I	D1	36	O	CL	48	O	SP2

34	VD	XV1	9
35	HD	XV2	5
25	D0	XV3	8
24	D1	XV4	4
23	D2	XSG1	11
28	MODE1	XSG2	10
27	MODE2	SP1	1
26	MODE3	SP2	48
20	MODE4	XDL1	45
47	MODE5	XDL2	44
46	MODE6	XH1	17
13	FL	XH2	16
7	TEST1	XRG	12
37	TEST2	SHP	3
22	EN	SHD	2
		XSUB	21
		CLP1	42
		ID	41
		OSCO	40
		PBLK	38
		SHD	39
		VAA	14
		XCK	43
		XDL1-XDL3	45
		XH1,XH2	16
		XRG	12
		XSUB	21
		XSG1,XSG2	10
		XV1-XV4	4

**INPUT**

CK : INVERTER INPUT FOR DUTY CONTROL (MAIN CLOCK)

D0 - D2 : ELECTRONIC SHUTTER SPEED CHANGE

EN : ELECTRONIC SHUTTER ON/OFF (0 : OFF 1 : ON)

FL : ELECTRONIC SHUTTER FLICKER LESS

HD : HORIZONTAL DRIVE PULSE

MODE1 : COLOR/MONOCROME (B/W) CHANGE (0 : COLOR 1 : B/W)

MODE2 : FIELD/FRAME STORAGE CHANGE (0 : FIELD 1 : FRAME)

MODE3 : NTSC/PAL CHANGE (0 : NTSC 1 : PAL)

MODE4 : ELECTRONIC SHUTTER SPEED INPUT SELECT (0 : SERIAL IN 1 : PARALLEL IN)

MODE5 : COLOR/MONOCROME (B/W) CHANGE (0 : COLOR 1 : B/W)

MODE6 : PBLK CONTROL PULSE (0 : NARROW 1 : WIDE)

OSCI : INVERTER INPUT FOR OSCILLATOR

TEST1 : OPEN

TEST2 : GND

VD : VERTICAL DRIVE SIGNAL

**OUTPUT**

CL : CLOCK OUTPUT FOR SYNC GENERATOR

CLP1 - CLP3 : CLAMP PULSE

ID : LINE DISCRIMINATE PULSE

OSCO : INVERTER OUTPUT FOR OSCILLATOR

PBLK : PRE-BLANKING PULSE

SHD : CCD DATA OUTPUT S/H PULSE

SHP : CCD PRE CHARGE LEVEL S/H PULSE

SP1,SP2 : COLOR SEPARATE S/H PULSE

VAA : VERTICAL BLANKING CLEANING PULSE

XCK : INVERTER OUTPUT FOR DUTY CONTROL

XDL1 - XDL3 : CLOCK PULSE FOR DELAY LINE

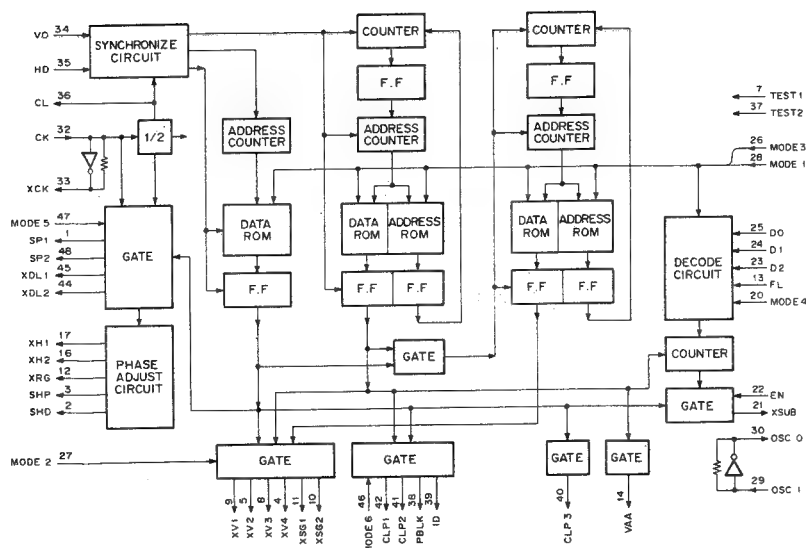
XH1,XH2 : H REGISTER CLOCK PULSE

XRG : CCD OUTPUT RESET PULSE

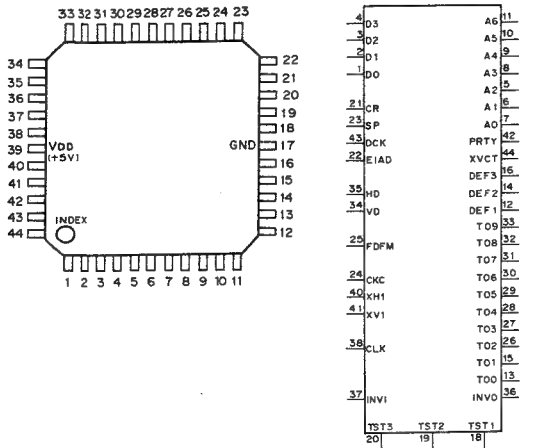
XSUB : ELECTRIC CHARGE SWEEPING AWAY PULSE

XSG1,XSG2 : SENSOR ELECTRIC CHARGE READ OUT PULSE

XV1 - XV4 : V REGISTER CLOCK PULSE

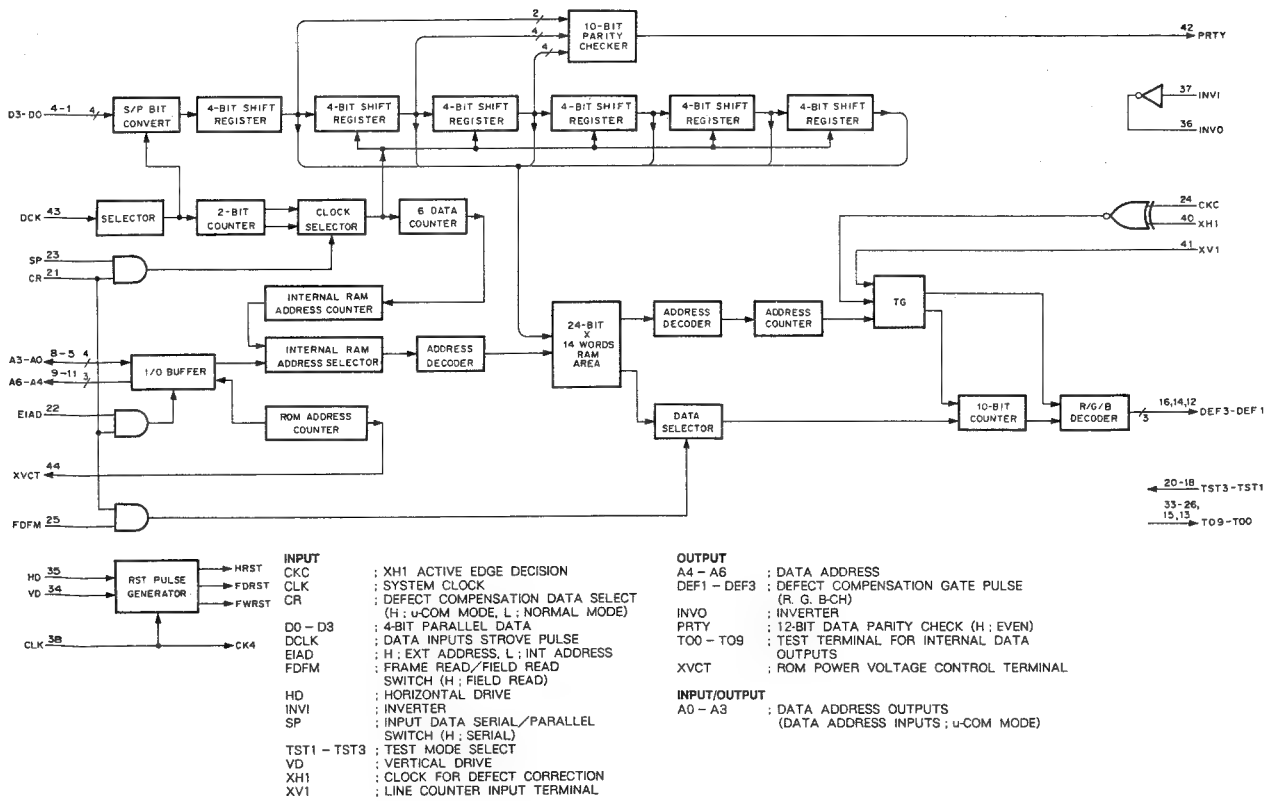


CXD8095Q (SONY) FLAT PACKAGE  
C-MOS GATE ARRAY  
- TOP VIEW -



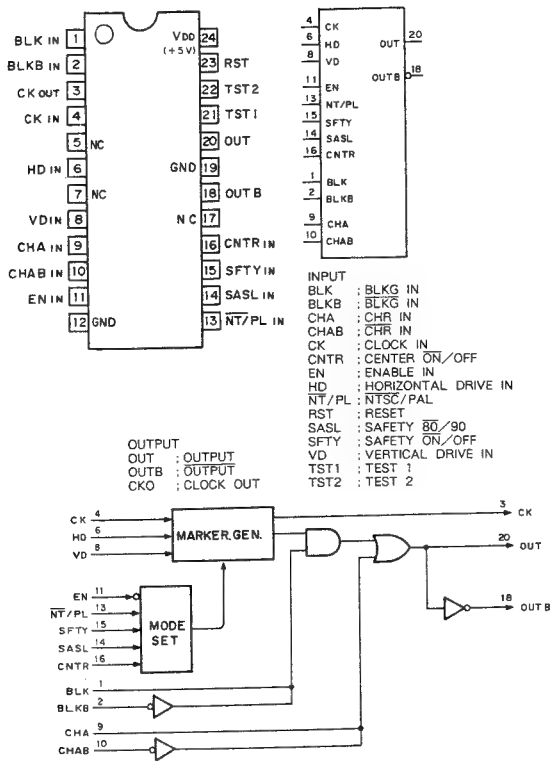
(V<sub>DD</sub> = +5V)

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I	D0	12	O	DEF1	23	I	SP	34	I	VD
2	I	D1	13	O	TO0	24	I	CKC	35	I	HD
3	I	D2	14	O	DEF2	25	I	FDFM	36	O	INVO
4	I	D3	15	O	TO1	26	O	TO2	37	I	INVI
5	I/O	A2	16	O	DEF3	27	O	TO3	38	I	CLK
6	I/O	A1	17	-	GND	28	O	TO4	39	-	VDD
7	I/O	A0	18	I	TST1	29	O	TO5	40	I	XH1
8	I/O	A3	19	I	TST2	30	O	TO6	41	I	XV1
9	O	A4	20	I	TST3	31	O	TO7	42	O	PRTY
10	O	A5	21	I	CR	32	O	TO8	43	I	DCK
11	O	A6	22	I	EIAD	33	O	TO9	44	O	XVCT

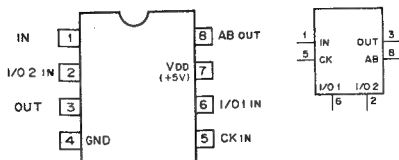




CXD8154M (SONY)  
C-MOS GATE ARRAY  
- TOP VIEW -

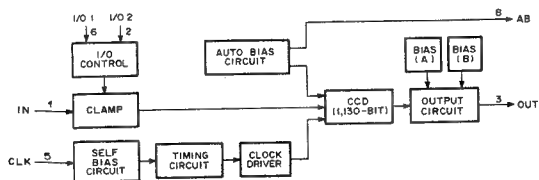


CXL5504M (SONY)  
C-MOS CCD 1H DELAY LINE  
- TOP VIEW -

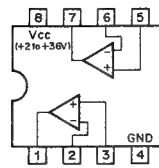


AB : AUTO BIAS DC OUTPUT  
CK : CLOCK INPUT  
IN : SIGNAL INPUT

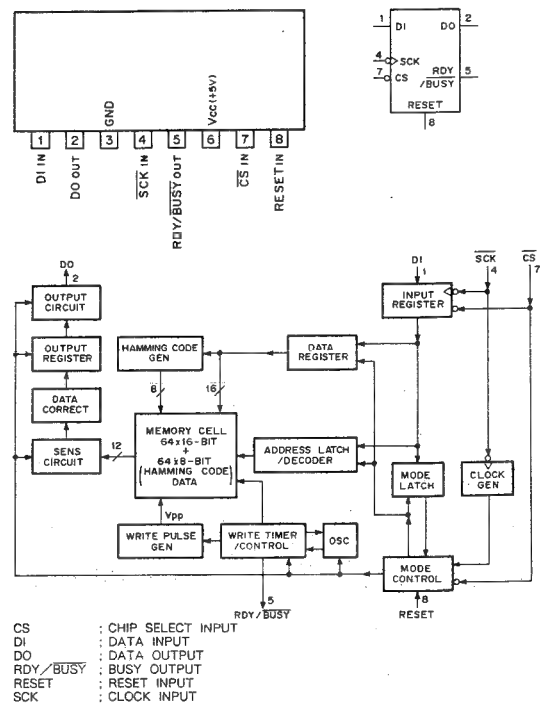
I/O 1, I/O 2 : I/O CONTROL 1,2 INPUTS  
OUT : SIGNAL OUTPUT



LM2903M (RAYTHEON) FLAT PACKAGE  
DUAL VOLTAGE COMPARATORS  
- TOP VIEW -



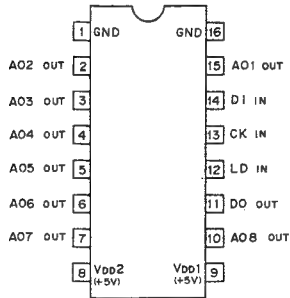
M6M80011L (MITSUBISHI)  
1k (64x16)-BIT ERASABLE PROM  
- SIDE VIEW -



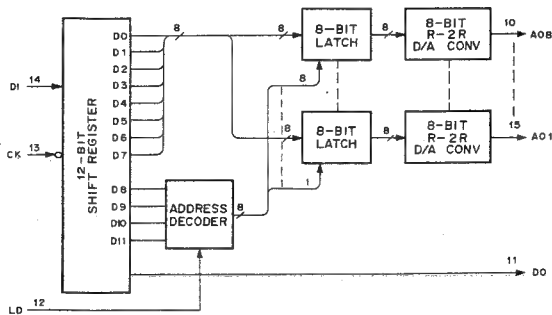
## MB88342PF (FUJITSU) FLAT PACKAGE

C-MOS 8-BIT D/A CONVERTER

- TOP VIEW -



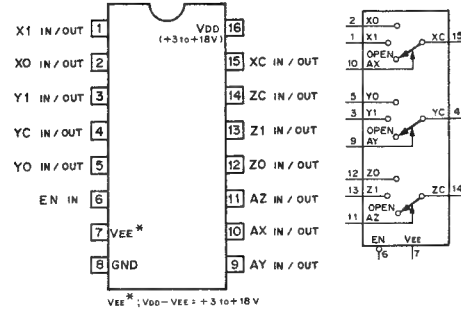
AO1 - AO8 : 8-BIT D/A OUTPUTS  
 CK : CLOCK INPUT  
 D1 : SERIAL DATA INPUT  
 DO : DATA OUTPUT  
 LD : DATA LOAD CONTROL INPUT (H: LOAD)



## MC14053BF (MOTOROLA) FLAT PACKAGE

C-MOS THIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMUTIPLEXER

- TOP VIEW -



VEE\*: VDD - VEE = +3 to +18V

CONT. INPUTS	ON
EN	CHANNEL
0	0
0	1
1	X

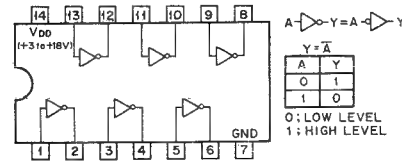
0: LOW LEVEL  
 1: HIGH LEVEL  
 X: DON'T CARE.

## MC14069UBF (MOTOROLA)

TC4069UBF (TOSHIBA) FLAT PACKAGE

C-MOS INVERTER

- TOP VIEW -



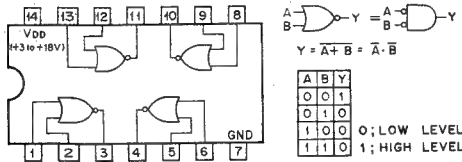
A	Y
0	1
1	0

0: LOW LEVEL  
 1: HIGH LEVEL

## MC14001BF (MOTOROLA) FLAT PACKAGE

C-MOS 2-INPUT NOR GATE

- TOP VIEW -



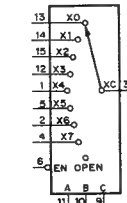
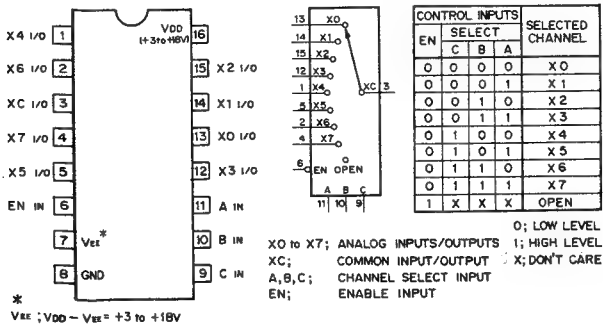
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0: LOW LEVEL  
 1: HIGH LEVEL

## MC14051BF (MOTOROLA) FLAT PACKAGE

C-MOS 8-CHANNEL ANALOG MULTIPLEXER/DEMUTIPLEXER

- TOP VIEW -



CONTROL INPUTS				SELECTED CHANNEL
EN	SELECT			
	C	B	A	
0	0	0	0	X0
0	0	0	1	X1
0	0	1	0	X2
0	0	1	1	X3
0	1	0	0	X4
0	1	0	1	X5
0	1	1	0	X6
0	1	1	1	X7
1	X	X	X	OPEN

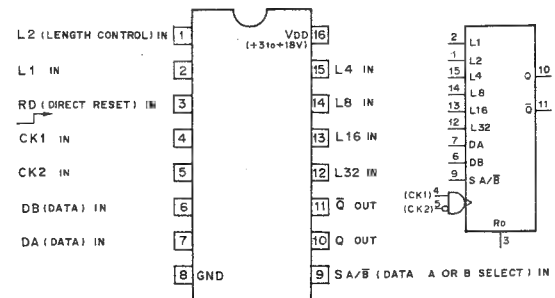
0: LOW LEVEL  
 1: HIGH LEVEL  
 X: DON'T CARE  
 A, B, C: CHANNEL SELECT INPUT  
 EN: ENABLE INPUT

\* VEE: VDD - VEE = +3 to +18V

## MC14557BF (MOTOROLA) FLAT PACKAGE

C-MOS 1-TO-64-BIT VARIABLE LENGTH SHIFT REGISTER

- TOP VIEW -



LENGTH SELECT TRUTH TABLE

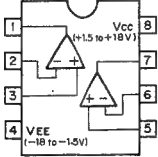
L32	L16	LB	L4	L2	L1	REGISTER LENGTH
0	0	0	0	0	0	1-BIT
0	0	0	0	0	1	2-BIT
0	0	0	0	1	0	3-BIT
0	0	0	1	0	1	4-BIT
0	0	0	1	0	0	5-BIT
1	1	1	1	1	0	61-BIT
1	1	1	1	0	1	62-BIT
1	1	1	1	1	1	63-BIT
1	1	1	1	1	1	64-BIT

INPUTS				OUTPUT
RD	SA/B	CK1	CK2	Q
0	0	1	0	DB
0	1	1	0	DA
0	0	1	1	DB
0	1	1	1	DA
1	X	X	X	0

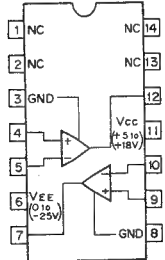
0: LOW LEVEL  
 1: HIGH LEVEL  
 X: DON'T CARE

NJM062M (JRC) FLAT PACKAGE  
TL062CPS (TI) FLAT PACKAGE

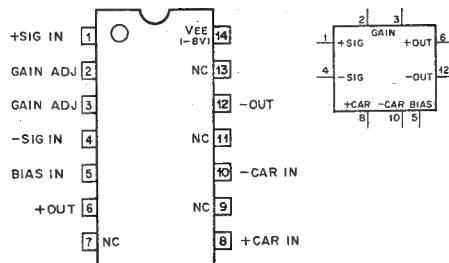
OPERATIONAL AMPLIFIER  
(JFET INPUT)  
- TOP VIEW -



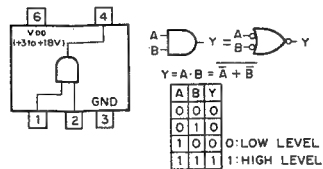
NJM319M (JRC) FLAT PACKAGE  
DUAL VOLTAGE COMPARATOR  
- TOP VIEW -



RC1496M (RAYTHEON) FLAT PACKAGE  
BALANCED MODULATOR/DEMODULATOR  
- TOP VIEW -



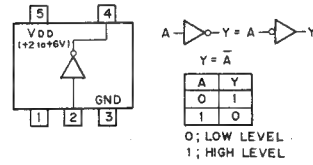
SC14S81F (MOTOROLA) FLAT PACKAGE  
TC4S81F (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT AND GATE  
- TOP VIEW -



SC7SU04F (MOTOROLA) FLAT PACKAGE

C-MOS INVERTER

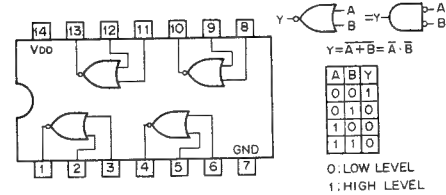
- TOP VIEW -



SN74HC02NS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT NOR GATE

- TOP VIEW -



NOTE:

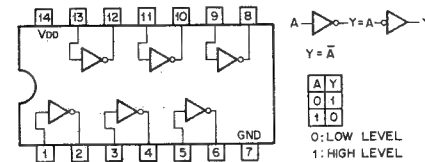
TYPE	V <sub>DD</sub>
TC74AC02F	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC04NS (TI) FLAT PACKAGE

TC74AC04F (TOSHIBA) FLAT PACKAGE

C-MOS HEX INVERTER

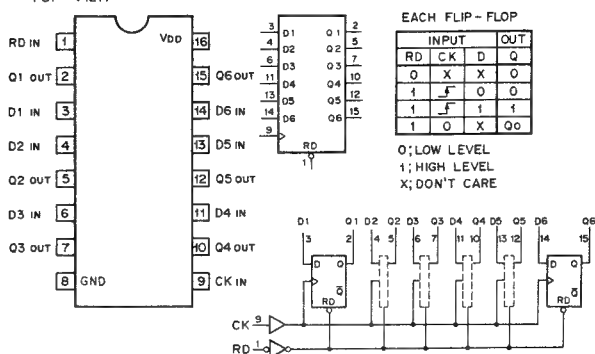
- TOP VIEW -



NOTE:

TYPE	V <sub>DD</sub>
74ACT04 TYPES	+5V
74HCT04 TYPES	+5V
TC74AC04F	+2 to +5.5V
TC74ACT04F	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

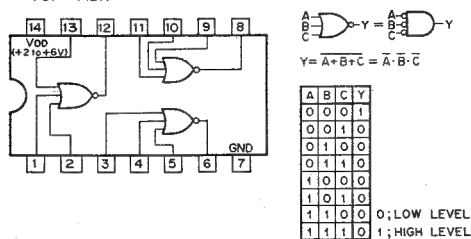
SN74HC174NS (TI) FLAT PACKAGE  
C-MOS D-TYPE FLIP-FLOP WITH RESET  
- TOP VIEW -



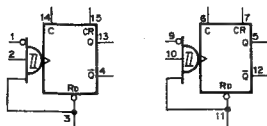
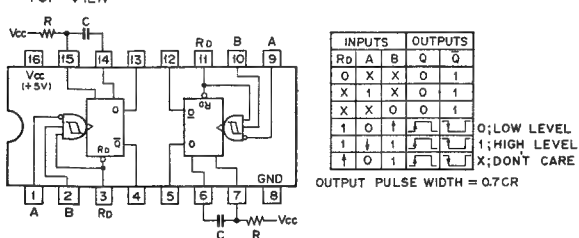
NOTE:

TYPE	V <sub>DD</sub>
74AC	+3.3 to +5V
74ACT	+5V
74HC	+2 to +6V
TC74AC174F	+2 to +5.5V

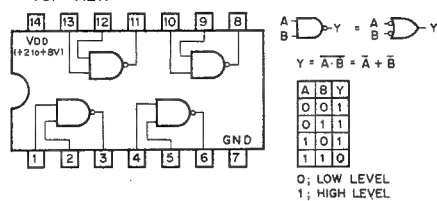
SN74HC27NS (TI) FLAT PACKAGE  
C-MOS 3-LINE POSITIVE-NOR GATE  
- TOP VIEW -



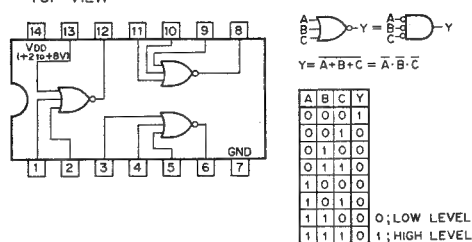
SN74LS221NS (TI) FLAT PACKAGE  
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT  
- TOP VIEW -



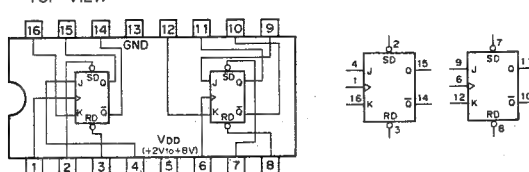
TC40H000F (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT NAND GATE  
- TOP VIEW -



TC40H027F (TOSHIBA) FLAT PACKAGE  
C-MOS 3-INPUT POSITIVE-NOR GATE  
- TOP VIEW -



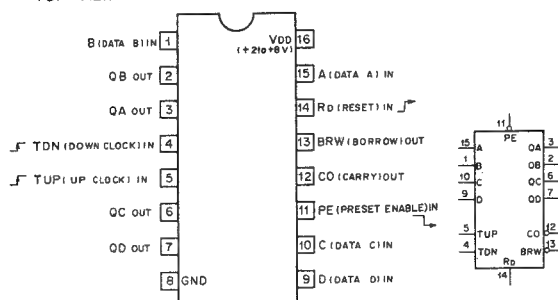
TC40H076AF (TOSHIBA) FLAT PACKAGE  
C-MOS HIGH SPEED EDGE TRIGGER TYPE J-K FLIP-FLOP WITH DIRECT SET/RESET  
- TOP VIEW -



INPUTS					OUTPUTS	
RD	SD	CK	J	K	Q	Q̄
1	0	X	X	X	1	0
0	1	X	X	X	0	1
0	0	X	X	X	1	1
1	1		0	0	NO CHANGE	
1	1		1	0	1	0
1	1		0	1	0	1
1	1		1	1	TOGGLE	
1	1		X	X	NO CHANGE	

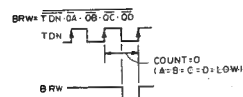
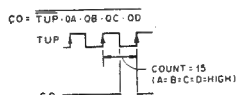
0; LOW LEVEL  
 1; HIGH LEVEL  
 X; DON'T CARE

TC40H193F (TOSHIBA) FLAT PACKAGE  
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT UP/DOWN COUNTER  
- TOP VIEW -



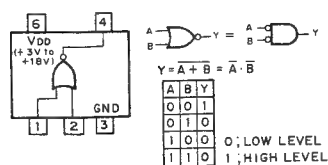
CONTROL INPUTS				MODE
Rd	PE	TUP	TDN	
1	X	X	X	RESET TO ZERO
0	0	X	X	PRESET
0	1	1	1	UP COUNT
0	1	1	0	DOWN COUNT
0	1	1	1	NO COUNT

0: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE.

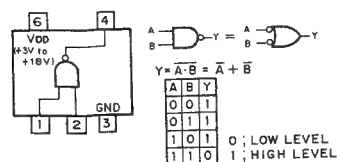


COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

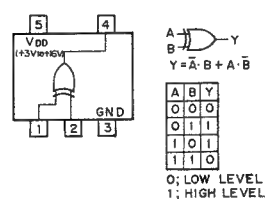
TC4S01F (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT NOR GATE  
- TOP VIEW -



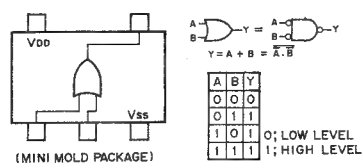
TC4S11F (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT NAND GATE  
- TOP VIEW -



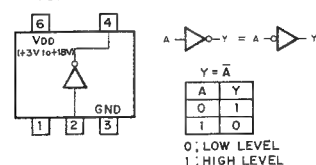
TC4S30F (TOSHIBA) FLAT PACKAGE  
C-MOS EXCLUSIVE OR GATE  
- TOP VIEW -



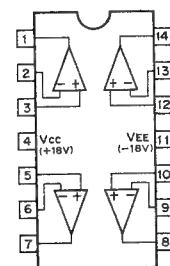
TC4S71F (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT OR GATE  
- TOP VIEW -



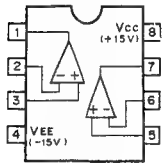
TC4SU69F (TOSHIBA) FLAT PACKAGE  
C-MOS INVERTER BUFFER  
- TOP VIEW -



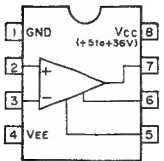
TL064CNS (TI) FLAT PACKAGE  
OPERATIONAL AMPLIFIER  
(J FET-INPUT)  
- TOP VIEW -



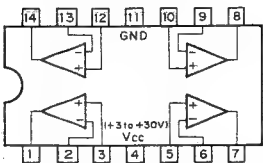
TL082CPS (TI) FLAT PACKAGE  
OPERATIONAL AMPLIFIER  
(J FET-INPUT)  
- TOP VIEW -



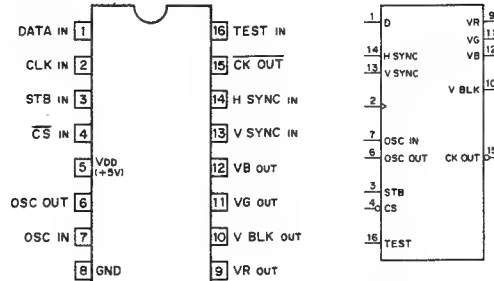
uPC311G2 (NEC) FLAT PACKAGE  
VOLTAGE COMPARATOR  
- TOP VIEW -



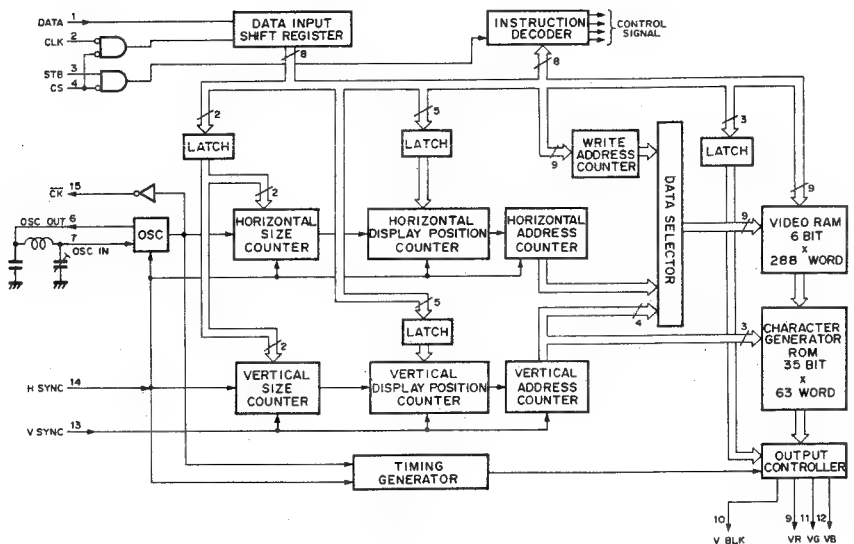
uPC324G2 (NEC) FLAT PACKAGE  
QUAD. OP AMPLIFIER  
- TOP VIEW -



uPD6142G-101 (NEC) FLAT PACKAGE  
C-MOS 8-BIT SERIAL INPUT CHARACTER DISPLAY  
- TOP VIEW -

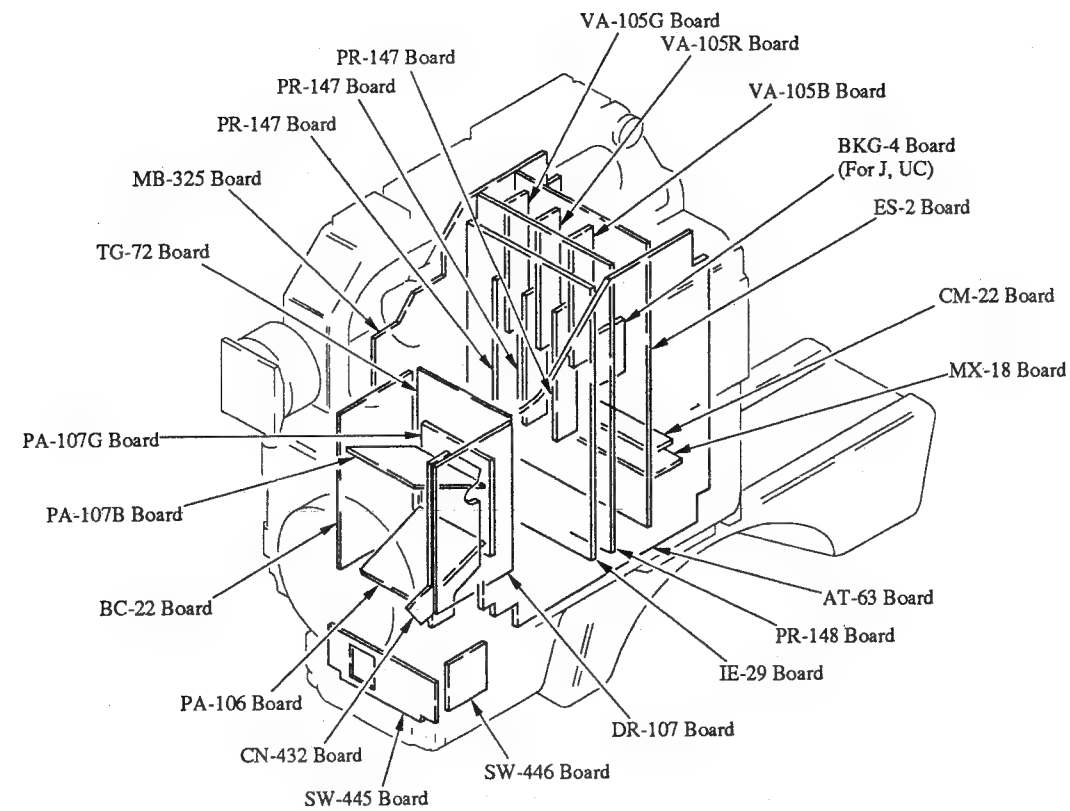


D; DATA INPUT  
CK OUT; EQUAL TO OUTPUT OF OSC OUT  
CLK; CLOCK INPUT  
CS; CHIP SELECT INPUT  
H SYNC; H SYNC INPUT  
OSC IN, OUT; EXTERNAL TERMINAL FOR OSC  
STB; STROBE INPUT  
TEST; TEST CLOCK INPUT  
VR; BLUE CHARACTER DATA OUTPUT  
V BLK; V BLANKING OUTPUT  
VG; GREEN CHARACTER DATA OUTPUT  
VR; RED CHARACTER DATA OUTPUT  
V SYNC; V SYNC INPUT

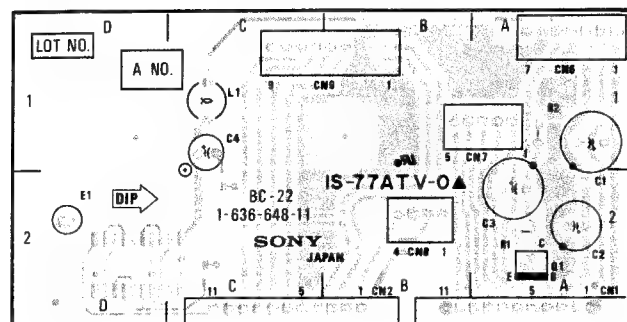


# SECTION C

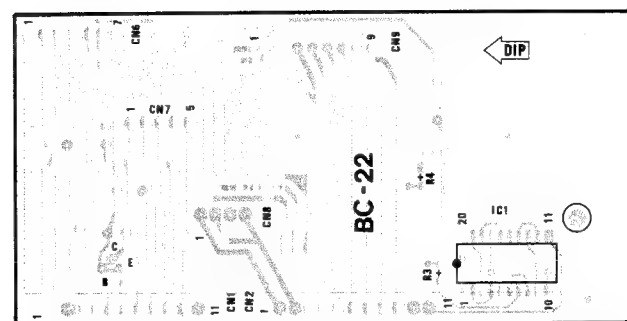
## SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS



BC-22 BOARD



1-636-648-11 COMPONENT SIDE

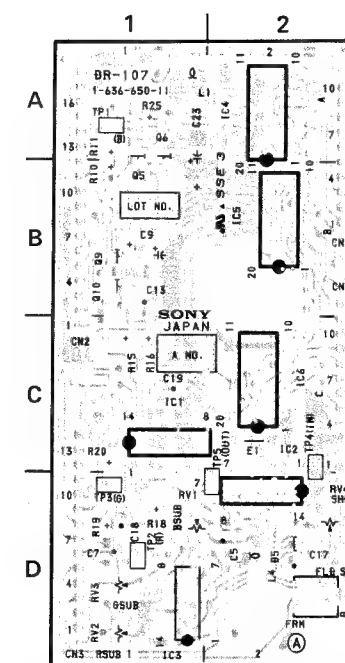


1-636-654-11 SOLDERING SIDE

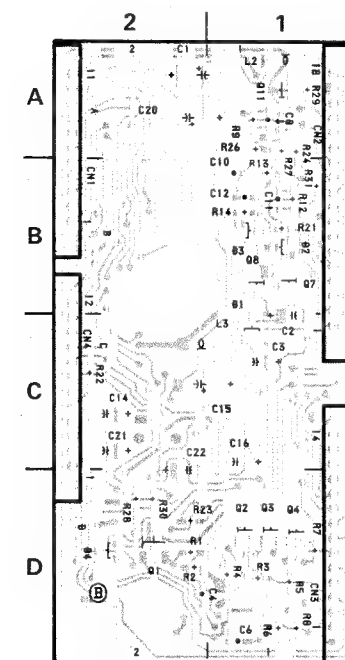
TG-72 BOARD

TG-72 (1-636-652-11)

- |     |     |
|-----|-----|
| CN1 | A-1 |
| CN2 | C-1 |
| CN3 | A-2 |
| CN4 | C-2 |
| CP1 | A-2 |
| IC1 | B-2 |
| IC2 | A-1 |
| IC3 | B-1 |
| IC4 | C-1 |
| IC5 | B-2 |
| IC6 | C-2 |



1-636-650-11 COMPONENT SIDE



1-636-650-11 SOLDERING SIDE

DR-107 BOARD

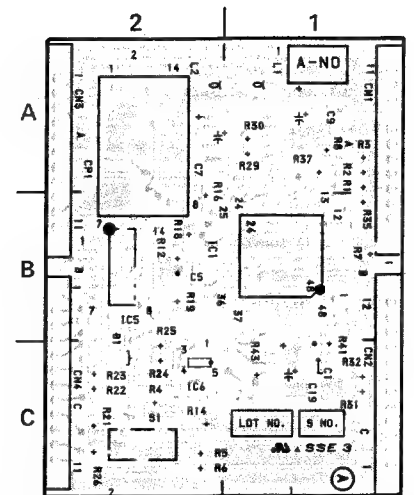
DR-107 (1-636-650-11)

- |     |     |
|-----|-----|
| CN1 | B-2 |
| CN2 | A-1 |
| CN3 | D-1 |
| CN4 | C-2 |
| D1  | B-1 |
| D2  | B-1 |
| D4  | D-2 |
| D5  | D-2 |

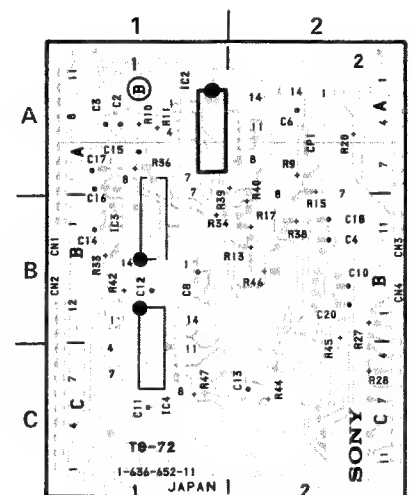
- |     |     |
|-----|-----|
| IC1 | C-1 |
| IC2 | C-2 |
| IC3 | D-1 |
| IC4 | A-2 |
| IC5 | B-2 |
| IC6 | C-2 |

- |     |     |
|-----|-----|
| Q1  | D-2 |
| Q2  | D-1 |
| Q3  | D-1 |
| Q4  | D-1 |
| Q5  | B-1 |
| Q6  | A-1 |
| Q7  | B-1 |
| Q8  | B-1 |
| Q9  | B-1 |
| Q10 | B-1 |
| Q11 | A-1 |

- |     |     |
|-----|-----|
| RV1 | D-1 |
| RV2 | D-1 |
| RV3 | D-1 |
| RV4 | D-2 |
| S1  | D-2 |
| TP1 | A-1 |
| TP2 | D-1 |
| TP3 | D-1 |
| TP4 | C-2 |
| TP5 | C-2 |



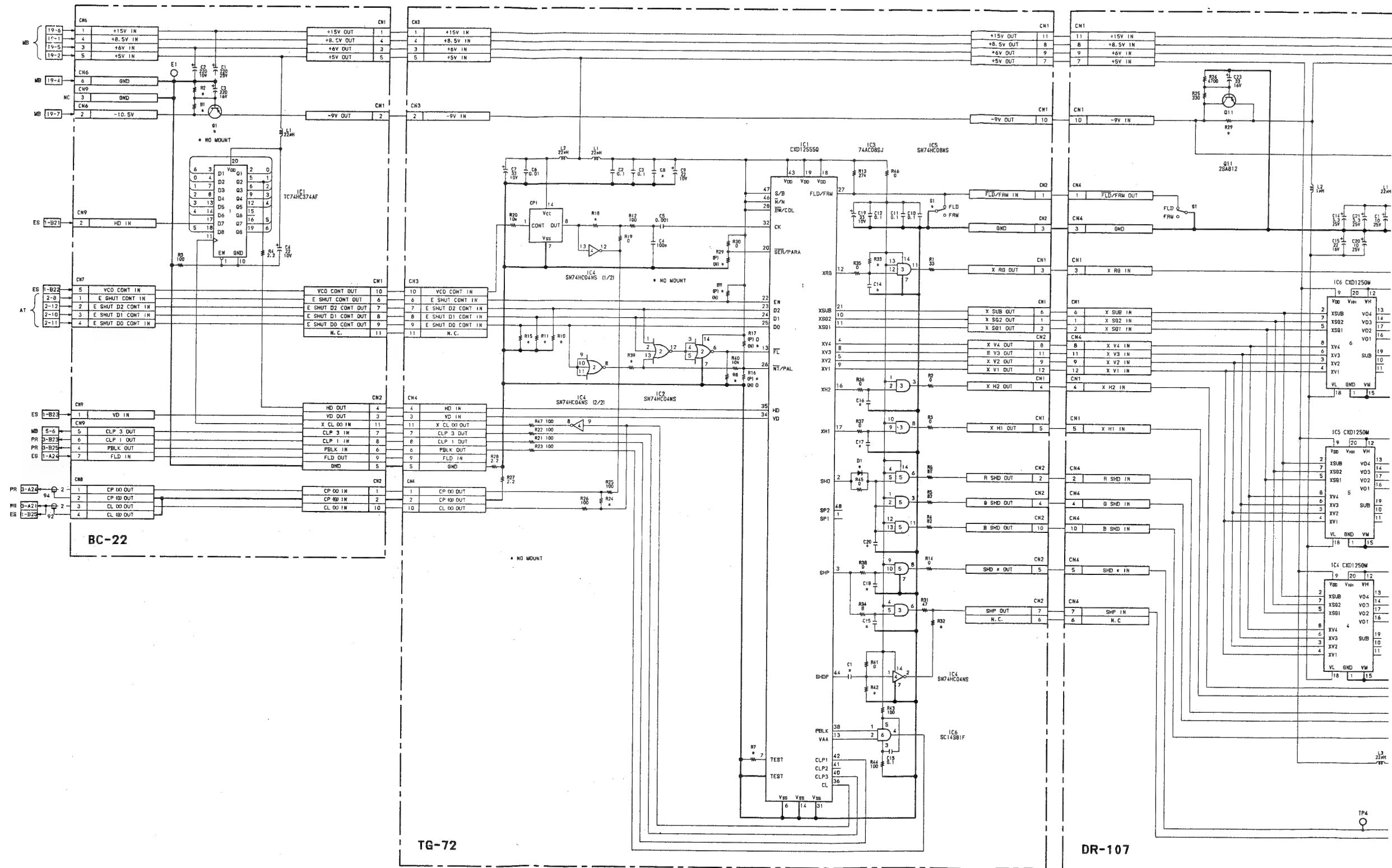
1-636-652-11 COMPONENT SIDE

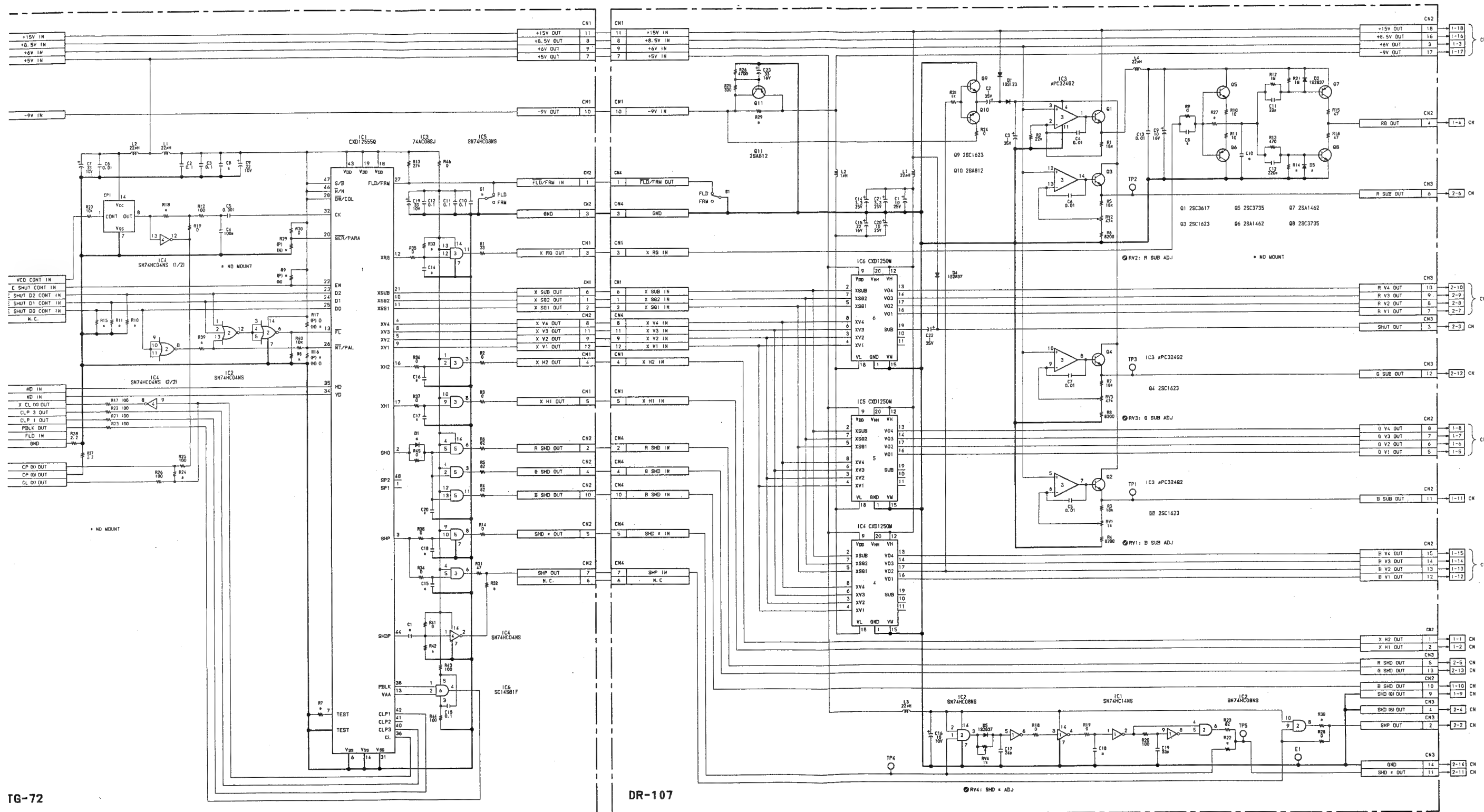


1-636-652-11 SOLDERING SIDE



CCD BLOCK (1/2)  
BC-22 BOARD  
TG-72 BOARD  
DR-107 BOARD





TG-72

DR-107

CCD BLOCK (1/2)

BC-22 BOARD  
TG-72 BOARD  
DR-107 BOARD

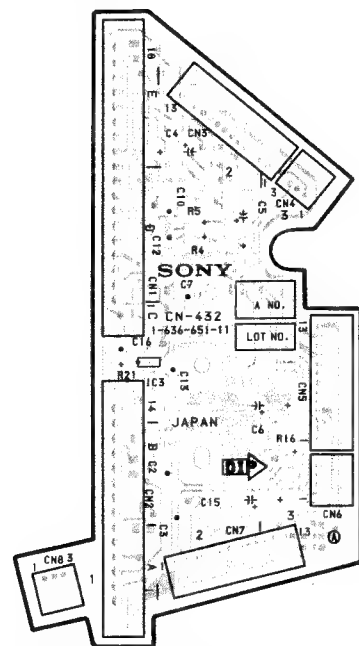
DXC-327 (J, UC)  
DXC-327P (EK)

B-DXC327-CCDBLOCK/M#1

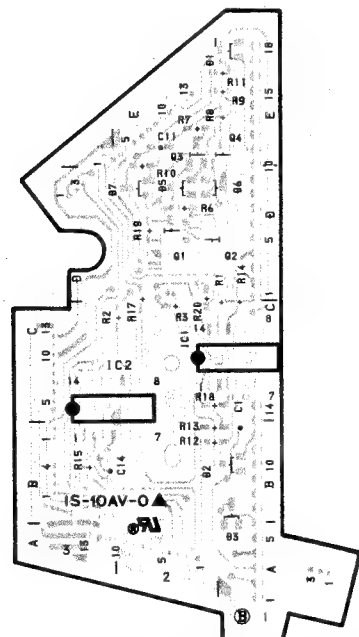
C-6

C-7

# CN-432 BOARD

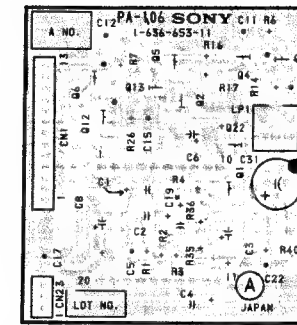


1-636-651-11 COMPONENT SIDE

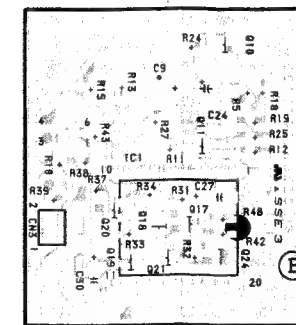


1-636-651-11 SOLDERING SIDE

# PA-106 BOARD

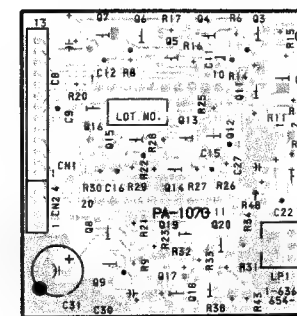


1-636-653-11 COMPONENT SIDE

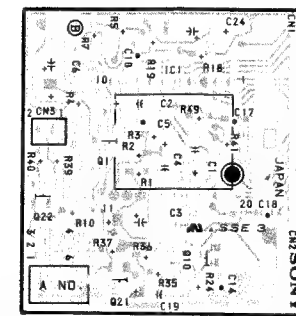


1-636-653-11 SOLDERING SIDE

# PA-1076 BOARD

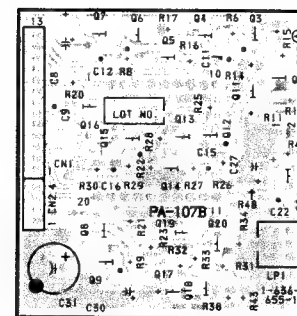


1-636-654-11, 12 COMPONENT SIDE

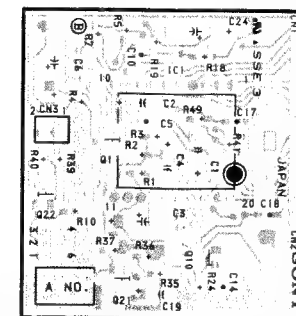


1-636-654-11, 12 SOLDERING SIDE

# PA-107B BOARD

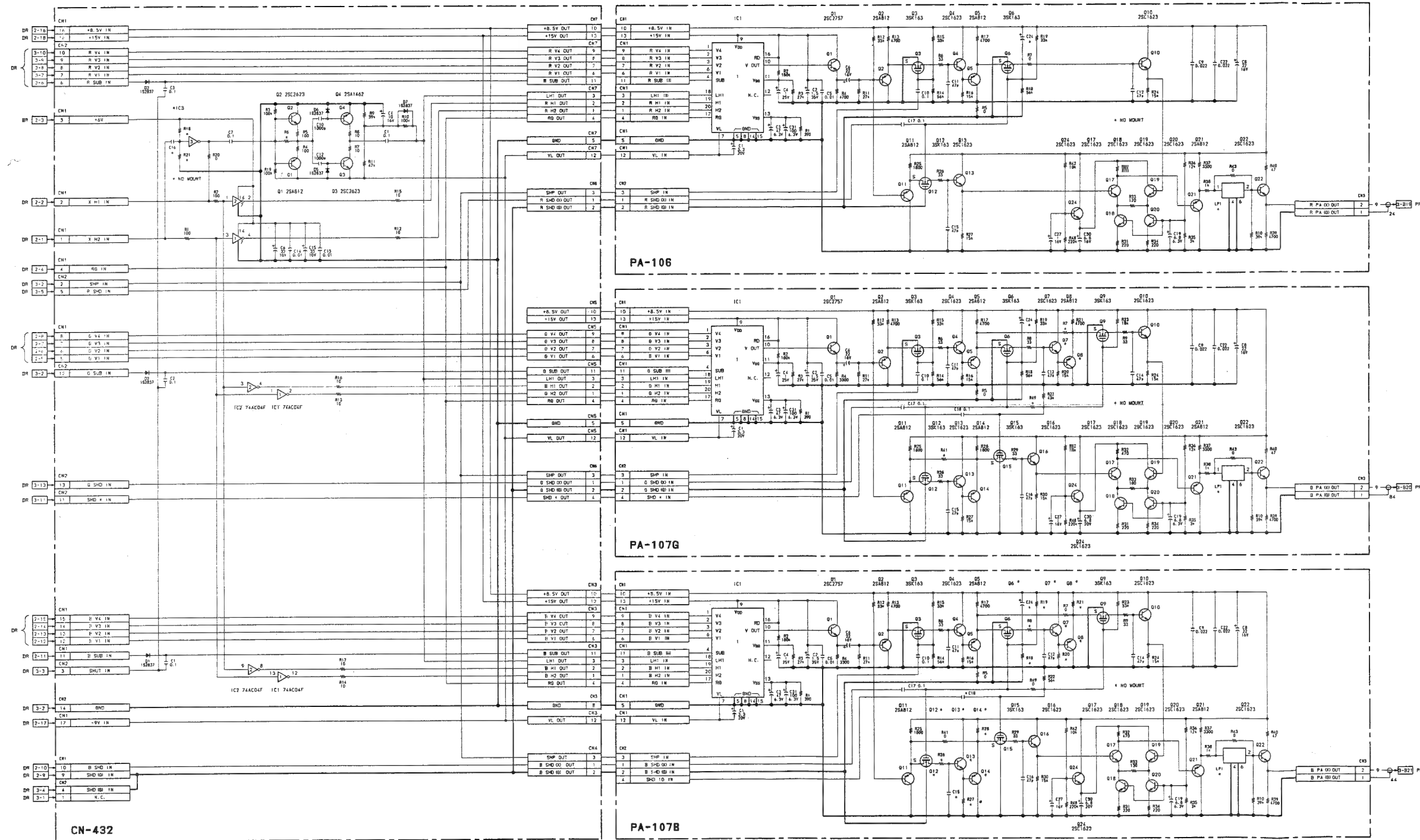


1-636-655-11, 12 COMPONENT SIDE



1-636-655-11, 12 SOLDERING SIDE

CCD BLOCK (2/2)  
CN-432 BOARD  
PA-106 BOARD  
PA-107G BOARD  
PA-107B BOARD

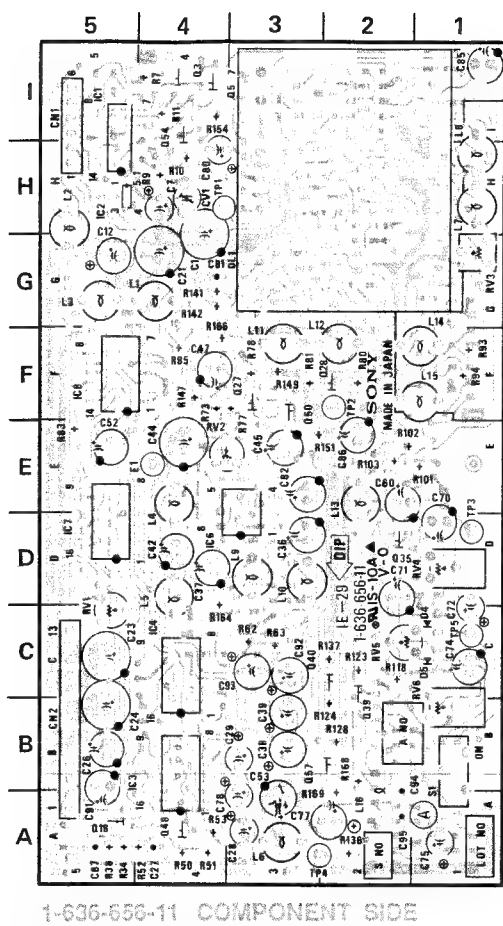


CCD BLOCK (2/2)  
CN-432 BOARD  
PA-107G BOARD  
PA-106 BOARD  
PA-107B BOARD  
DXC-327 (J, UC)  
DXC-327P (EK)

IE-29 BOARD

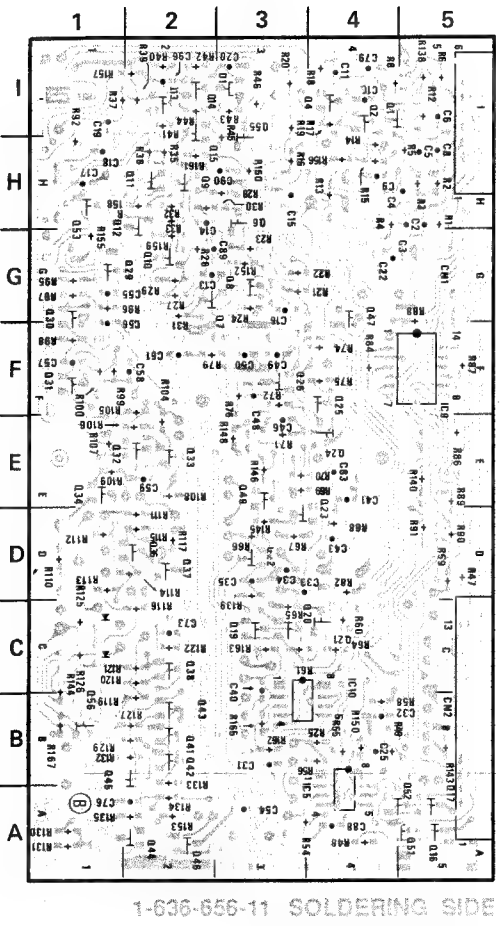
IE-29 (1-636-656-11)

CN1	G-5	Q46	A-2
CN2	B-5	Q48	A-4
		Q49	E-3
DL1	G-3	Q50	F-3
		Q51	A-5
D1	I-3	Q52	A-5
D4	C-1	Q53	H-1
D5	C-1	Q54	I-4
		Q55	I-3
E1	E-5	Q56	B-1
		Q57	B-3
IC1	I-5		
IC2	G-5	RV1	C-5
IC3	B-5	RV2	E-4
IC4	C-4	RV3	G-1
IC5	A-4	RV4	D-1
IC6	D-4	RV5	C-2
IC7	D-5	RV6	C-1
IC8	F-5		
IC9	F-5	S1	B-1
IC10	C-4		
		TP1	G-4
Q1	I-4	TP2	F-2
Q2	I-4	TP3	E-1
Q3	I-4	TP4	A-3
Q4	I-4	TP5	C-1
Q5	I-3		
Q6	H-3		
Q7	G-3		
Q8	G-3		
Q9	H-2		
Q10	G-2		
Q11	H-2		
Q12	H-1		
Q13	I-2		
Q14	I-2		
Q15	H-2		
Q16	A-5		
Q17	A-5		
Q18	A-5		
Q19	C-3		
Q21	C-4		
Q22	D-3		
Q23	D-4		
Q24	E-4		
Q25	F-4		
Q26	F-3		
Q27	F-3		
Q28	F-2		
Q29	G-2		
Q30	G-1		
Q31	F-1		
Q32	E-1		
Q33	E-2		
Q34	E-1		
Q35	D-2		
Q36	D-2		
Q37	D-2		
Q38	C-2		
Q39	B-2		
Q40	C-3		
Q41	B-2		
Q42	B-2		
Q43	B-2		
Q44	A-2		
Q45	B-1		



IE-29 (1-636-656-11)

CN1	G-5	Q46	A-2
CN2	B-5	Q48	A-4
		Q49	E-3
DL1	G-3	Q50	F-3
		Q51	A-5
D1	I-3	Q52	A-5
D4	C-1	Q53	H-1
D5	C-1	Q54	I-4
		Q55	I-3
E1	E-5	Q56	B-1
		Q57	B-3
IC1	I-5		
IC2	G-5	RV1	C-5
IC3	B-5	RV2	E-4
IC4	C-4	RV3	G-1
IC5	A-4	RV4	D-1
IC6	D-4	RV5	C-2
IC7	D-5	RV6	C-1
IC8	F-5		
IC9	F-5	S1	B-1
IC10	C-4		
		TP1	G-4
Q1	I-4	TP2	F-2
Q2	I-4	TP3	E-1
Q3	I-4	TP4	A-3
Q4	I-4	TP5	C-1
Q5	I-3		
Q6	H-3		
Q7	G-3		
Q8	G-3		
Q9	H-2		
Q10	G-2		
Q11	H-2		
Q12	H-1		
Q13	I-2		
Q14	I-2		
Q15	H-2		
Q16	A-5		
Q17	A-5		
Q18	A-5		
Q19	C-3		
Q21	C-4		
Q22	D-3		
Q23	D-4		
Q24	E-4		
Q25	F-4		
Q26	F-3		
Q27	F-3		
Q28	F-2		
Q29	G-2		
Q30	G-1		
Q31	F-1		
Q32	E-1		
Q33	E-2		
Q34	E-1		
Q35	D-2		
Q36	D-2		
Q37	D-2		
Q38	C-2		
Q39	B-2		
Q40	C-3		
Q41	B-2		
Q42	B-2		
Q43	B-2		
Q44	A-2		
Q45	B-1		





## IE-29 BOARD

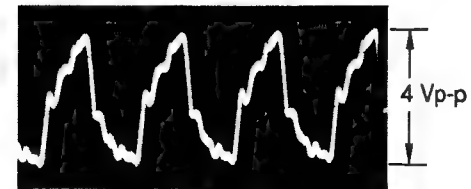
## 注意:

1. DC電圧はデジタル電圧計による値。
2. 波形写真、及びDC電圧は下記条件での測定。
  - ・グレースケールチャートを撮像し、波形モニターにて、ビデオ出力の白レベルが100 IREになる様にレンズ絞りをセットする。
  - ・ GAIN : 0 dB
  - ・ WHITE BAL : PRE
  - ・ ABL : OFF
  - ・ SHUTTER : OFF
  - ・ ZEBRA : OFF
  - ・ VF MARKER : OFF
  - ・ PHASE : 0°
  - ・ BARS : OFF

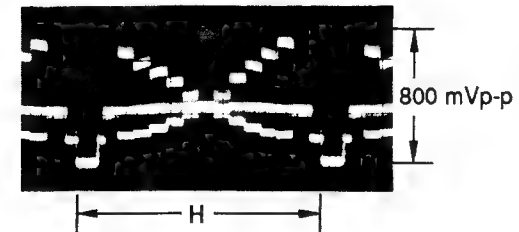
## NOTE:

1. All voltage are DC, measured with a digital voltmeter.
2. All waveforms are taken and DC voltage is measured in condition below.
  - ・ Shoot the grayscale chart. Adjust lens iris so that a white level is 100 IRE on the waveform monitor.
  - ・ GAIN : 0 dB
  - ・ WHITE BAL : PRE
  - ・ ABL : OFF
  - ・ SHUTTER : OFF
  - ・ ZEBRA : OFF
  - ・ VF MARKER : OFF
  - ・ PHASE : 0°
  - ・ BARS : OFF

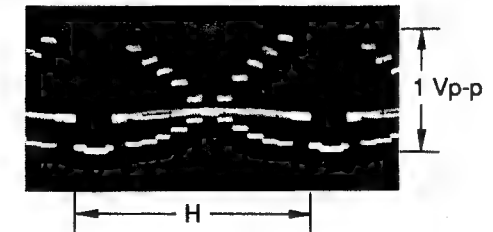
CN2-13 pin



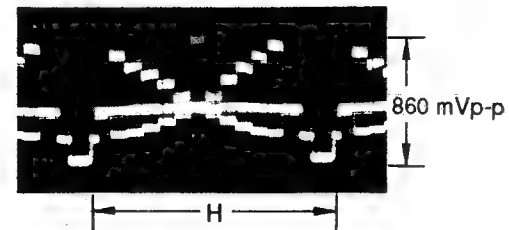
CN2-2 pin



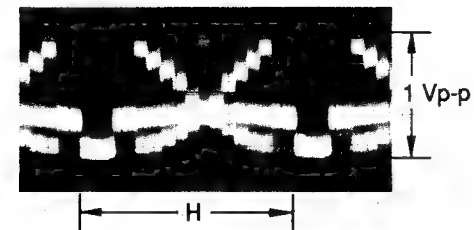
TP1



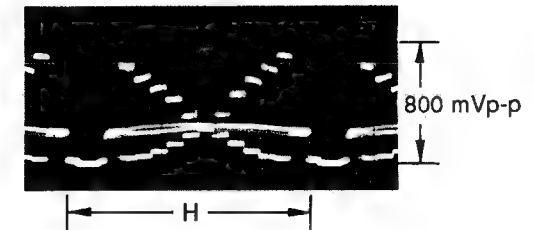
CN2-3 pin



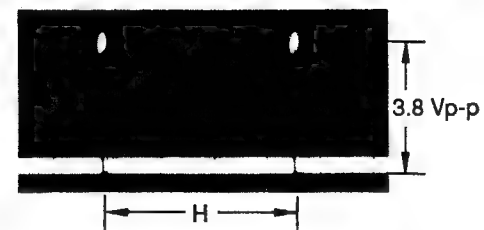
IC1-1 pin



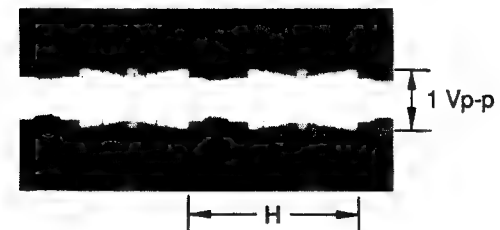
TP2



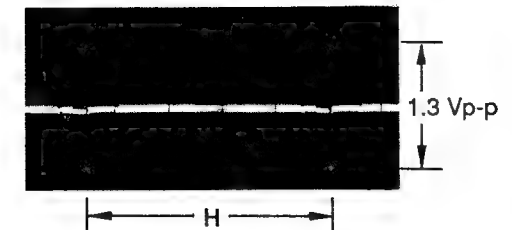
CN1-5 pin



IC1-12 pin



TP4

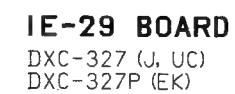


DXC-327 (J, UC)  
DXC-327P (EK)



**G**





C-21

:

3

4

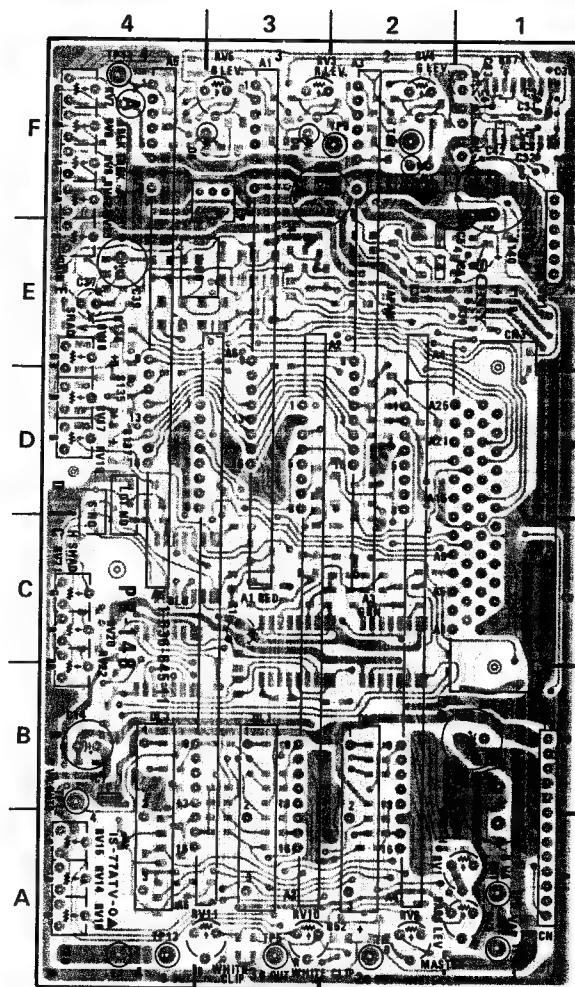
5

6

PR-148 BOARD

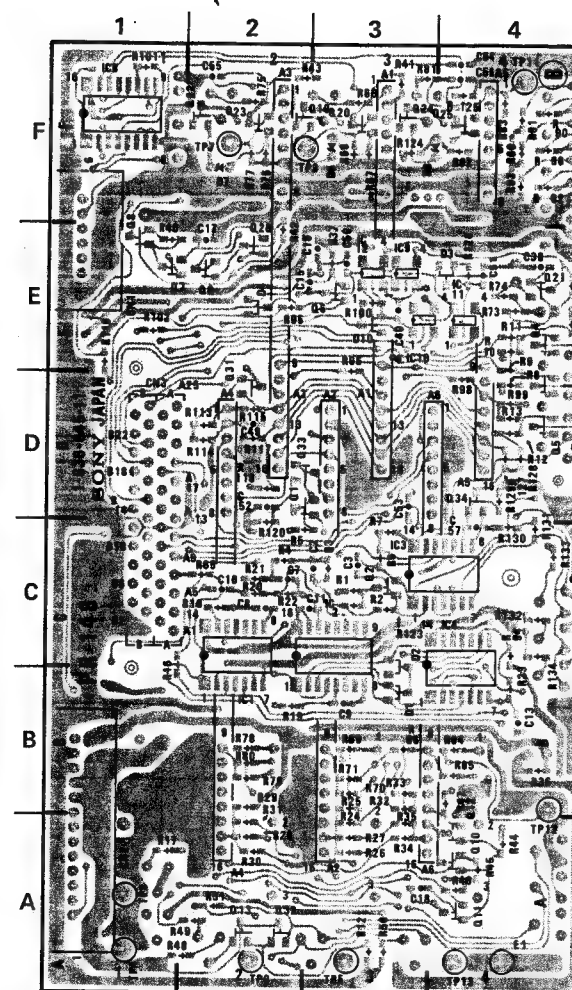
PR-148 (1-636-645-11)

CN1	E-1	RV1	A-2
CN2	A-1	RV2	A-1
CN3	E-1	RV3	F-3
DL1	B-3	RV4	F-2
DL2	B-2	RV5	F-3
DL3	B-4	RV6	F-4
		RV7	F-4
		RV8	F-4
D3	E-4	RV9	A-2
D4	E-2	RV10	A-3
D6	F-3	RV11	A-3
D7	F-2	RV12	F-4
D8	F-4	RV13	E-4
D9	F-1	RV14	A-4
D10	E-3	RV15	A-4
		RV16	A-4
E1	A-4	RV17	D-4
		RV18	E-4
IC1	B-2	RV19	D-4
IC2	C-3	RV20	C-4
IC3	C-3	RV21	C-4
IC4	C-4	RV22	C-4
IC5	E-1		
IC6	E-1	TP3	F-2
IC7	B-4	TP4	A-1
IC8	F-1	TP5	A-3
IC9	E-3	TP7	F-2
IC10	E-3	TP8	A-1
IC11	E-4	TP9	A-2
IC12	E-3	TP11	F-4
IC13	F-1	TP12	B-4
		TP13	A-4
LP1	F-3		
Q1	D-2		
Q2	C-3		
Q3	D-4		
Q4	E-4		
Q5	D-4		
Q6	E-3		
Q7	E-1		
Q8	E-1		
Q9	E-2		
Q10	A-4		
Q11	A-4		
Q12	B-4		
Q13	A-2		
Q19	F-3		
Q20	F-3		
Q21	E-4		
Q22	F-2		
Q23	F-2		
Q24	F-3		
Q25	F-4		
Q26	E-2		
Q31	D-2		
Q32	A-2		
Q33	D-2		
Q34	D-4		



1-636-645-11 COMPONENT SIDE

VA-10



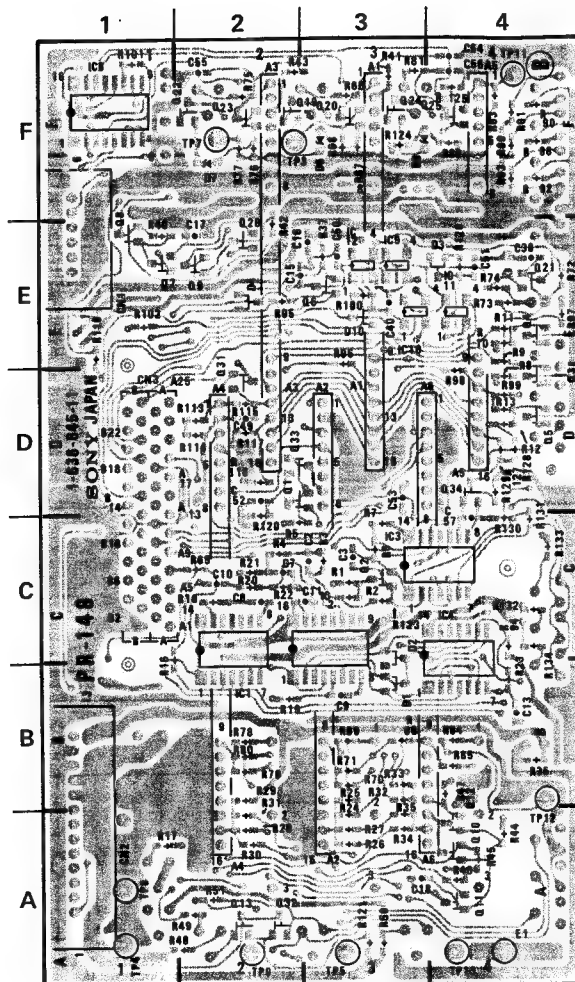
1-636-645-11 SOLDERING SIDE

PR-148 (1-636-645-11)

CN1	E-1	RV1	A-2
CN2	A-1	RV2	A-1
CN3	E-1	RV3	F-3
DL1	B-3	RV4	F-2
DL2	B-2	RV5	F-3
DL3	B-4	RV6	F-4
		RV7	F-4
		RV8	F-4
D3	E-4	RV9	A-2
D4	E-2	RV10	A-3
D6	F-3	RV11	A-3
D7	F-2	RV12	F-4
D8	F-4	RV13	E-4
D9	F-1	RV14	A-4
D10	E-3	RV15	A-4
		RV16	A-4
E1	A-4	RV17	D-4
		RV18	E-4
IC1	B-2	RV19	D-4
IC2	C-3	RV20	C-4
IC3	C-3	RV21	C-4
IC4	C-4	RV22	C-4
IC5	E-1		
IC6	E-1	TP3	F-2
IC7	B-4	TP4	A-1
IC8	F-1	TP5	A-3
IC9	E-3	TP7	F-2
IC10	E-3	TP8	A-1
IC11	E-4	TP9	A-2
IC12	E-3	TP11	F-4
IC13	F-1	TP12	B-4
		TP13	A-4
LP1	F-3		
Q1	D-2		
Q2	C-3		
Q3	D-4		
Q4	E-4		
Q5	D-4		
Q6	E-3		
Q7	E-1		
Q8	E-1		
Q9	E-2		
Q10	A-4		
Q11	A-4		
Q12	B-4		
Q13	A-2		
Q19	F-3		
Q20	F-3		
Q21	E-4		
Q22	F-2		
Q23	F-2		
Q24	F-3		
Q25	F-4		
Q26	E-2		
Q31	D-2		
Q32	A-2		
Q33	D-2		
Q34	D-4		

VA-10

VA-10

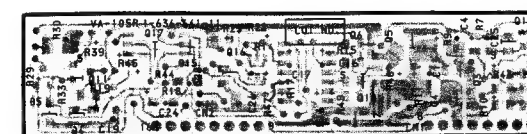


1-636-645-11 SOLDERING SIDE

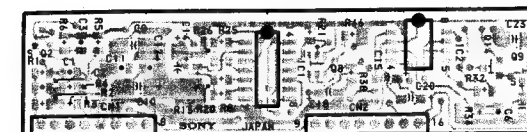
PR-148 (1-636-645-11)

CN1	E-1	RV1	A-2
CN2	A-1	RV2	A-1
CN3	E-1	RV3	F-3
		RV4	F-2
DL1	B-3	RV5	F-3
DL2	B-2	RV6	F-4
DL3	B-4	RV7	F-4
		RV8	F-4
D3	E-4	RV9	A-2
D4	E-2	RV10	A-3
D6	F-3	RV11	A-3
D7	F-2	RV12	F-4
D8	F-4	RV13	E-4
D9	F-1	RV14	A-4
D10	E-3	RV15	A-4
		RV16	A-4
E1	A-4	RV17	D-4
		RV18	E-4
		RV19	D-4
IC1	B-2	RV20	C-4
IC2	C-3	RV21	C-4
IC3	C-3	RV22	C-4
IC4	C-4		
IC5	E-1	TP3	F-2
IC6	E-1	TP4	A-1
IC7	B-4	TP5	A-3
IC8	F-1	TP7	F-2
IC9	E-3	TP8	A-1
IC10	E-3	TP9	A-2
IC11	E-4	TP11	F-4
IC12	E-3	TP12	B-4
IC13	F-1	TP13	A-4
LP1	F-3		
Q1	D-2		
Q2	C-3		
Q3	D-4		
Q4	E-4		
Q5	D-4		
Q6	E-3		
Q7	E-1		
Q8	E-1		
Q9	E-2		
Q10	A-4		
Q11	A-4		
Q12	B-4		
Q13	A-2		
Q19	F-3		
Q20	F-3		
Q21	E-4		
Q22	F-2		
Q23	F-2		
Q24	F-3		
Q25	F-4		
Q26	E-2		
Q31	D-2		
Q32	A-2		
Q33	D-2		
Q34	D-4		

## VA-105R BOARD

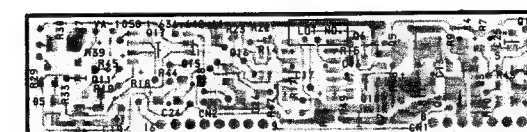


1-636-641-11 COMPONENT SIDE



1-636-641-11 SOLDERING SIDE

## VA-105G BOARD

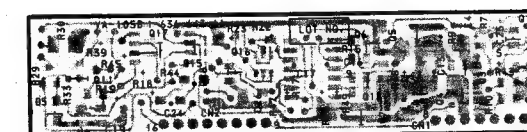


1-636-642-11 COMPONENT SIDE

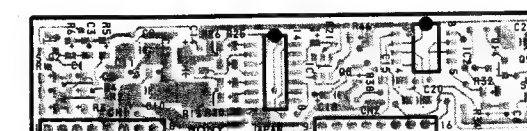


1-636-642-11 SOLDERING SIDE

## VA-105B BOARD

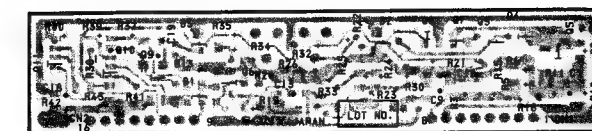


1-636-643-11 COMPONENT SIDE

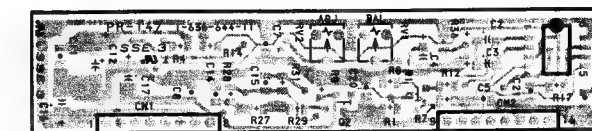


1-636-643-11 SOLDERING SIDE

## PR-147R/G/B BOARD



1-636-644-11 COMPONENT SIDE



1-636-644-11 SOLDERING SIDE

## PR-148 BOARD

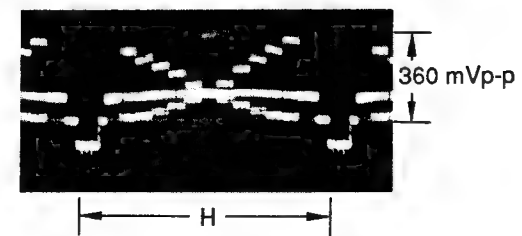
## 注意:

1. DC電圧はデジタル電圧計による値。
2. 波形写真、及びDC電圧は下記条件での測定。
  - ・グレースケールチャートを撮像し、波形モニターにて、ビデオ出力の白レベルが100 IREになる様にレンズ絞りをセットする。
  - ・ GAIN : 0 dB
  - ・ WHITE BAL : PRE
  - ・ ABL : OFF
  - ・ SHUTTER : OFF
  - ・ ZEBRA : OFF
  - ・ VF MARKER : OFF
  - ・ PHASE : 0°
  - ・ BARS : OFF

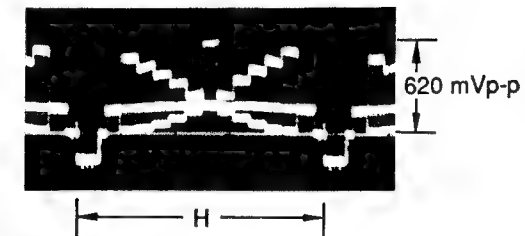
## NOTE:

1. All voltage are DC, measured with a digital voltmeter.
2. All waveforms are taken and DC voltage is measured in condition below.
  - ・ Shoot the grayscale chart. Adjust lens iris so that a white level is 100 IRE on the waveform monitor.
  - ・ GAIN : 0 dB
  - ・ WHITE BAL : PRE
  - ・ ABL : OFF
  - ・ SHUTTER : OFF
  - ・ ZEBRA : OFF
  - ・ VF MARKER : OFF
  - ・ PHASE : 0°
  - ・ BARS : OFF

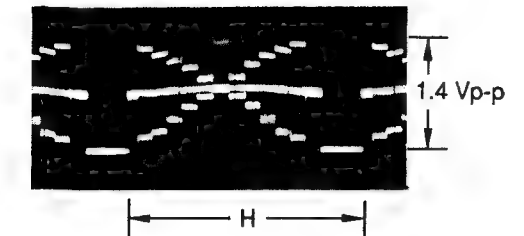
TP3



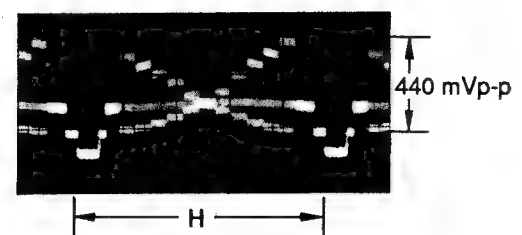
TP4



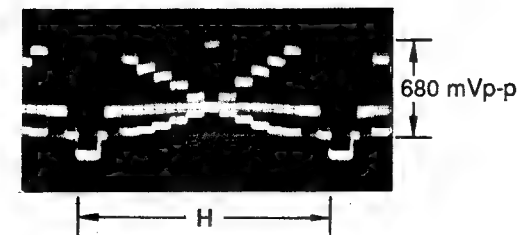
TP5



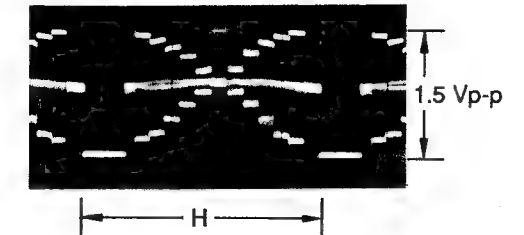
TP7



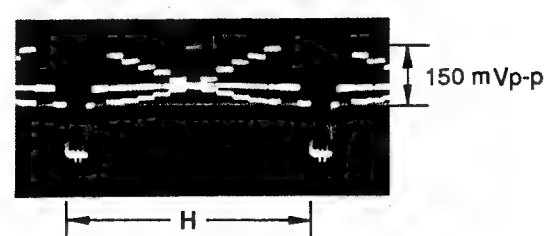
TP8



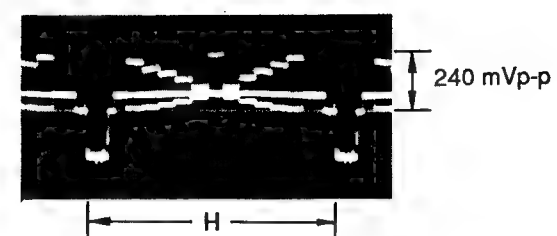
TP9



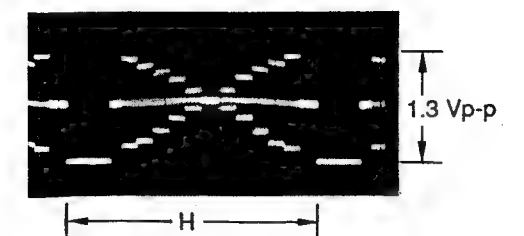
TP11



TP12



TP13



DXC-327 (J, UC)  
DXC-327P (EK)

PR-148 VA-105R/G/B  
PR-147R/G/B



**C-29**  
**B**

C

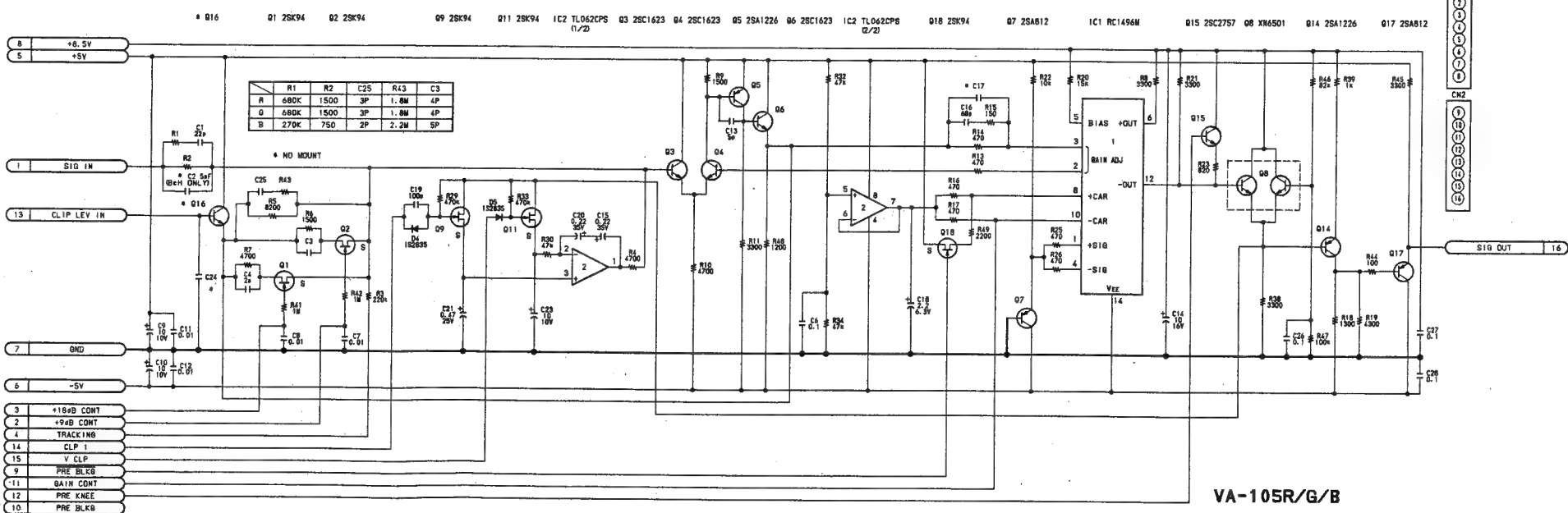
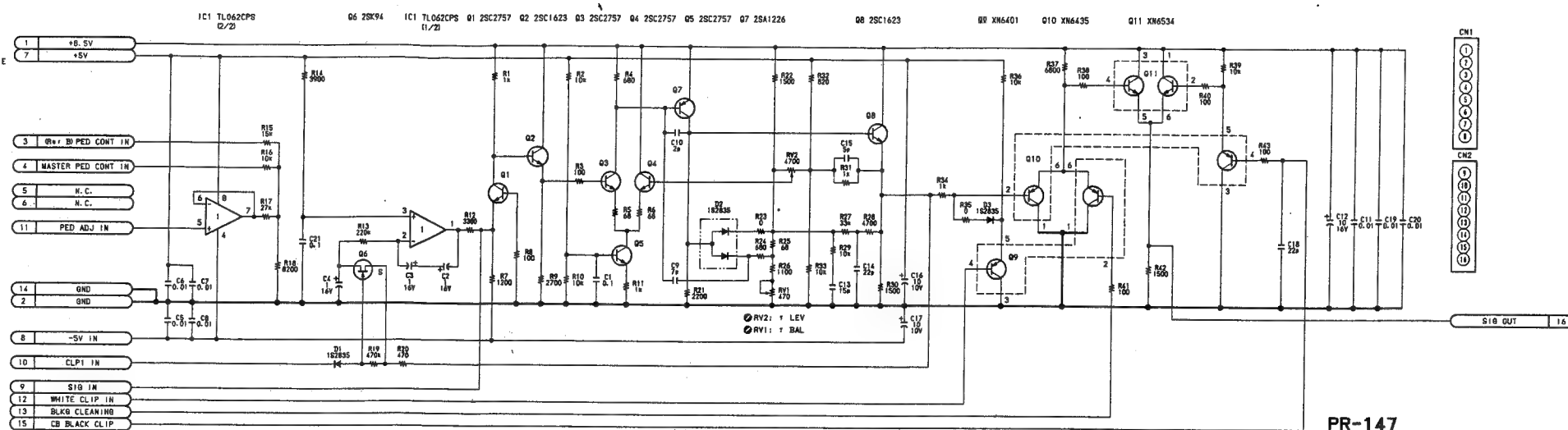
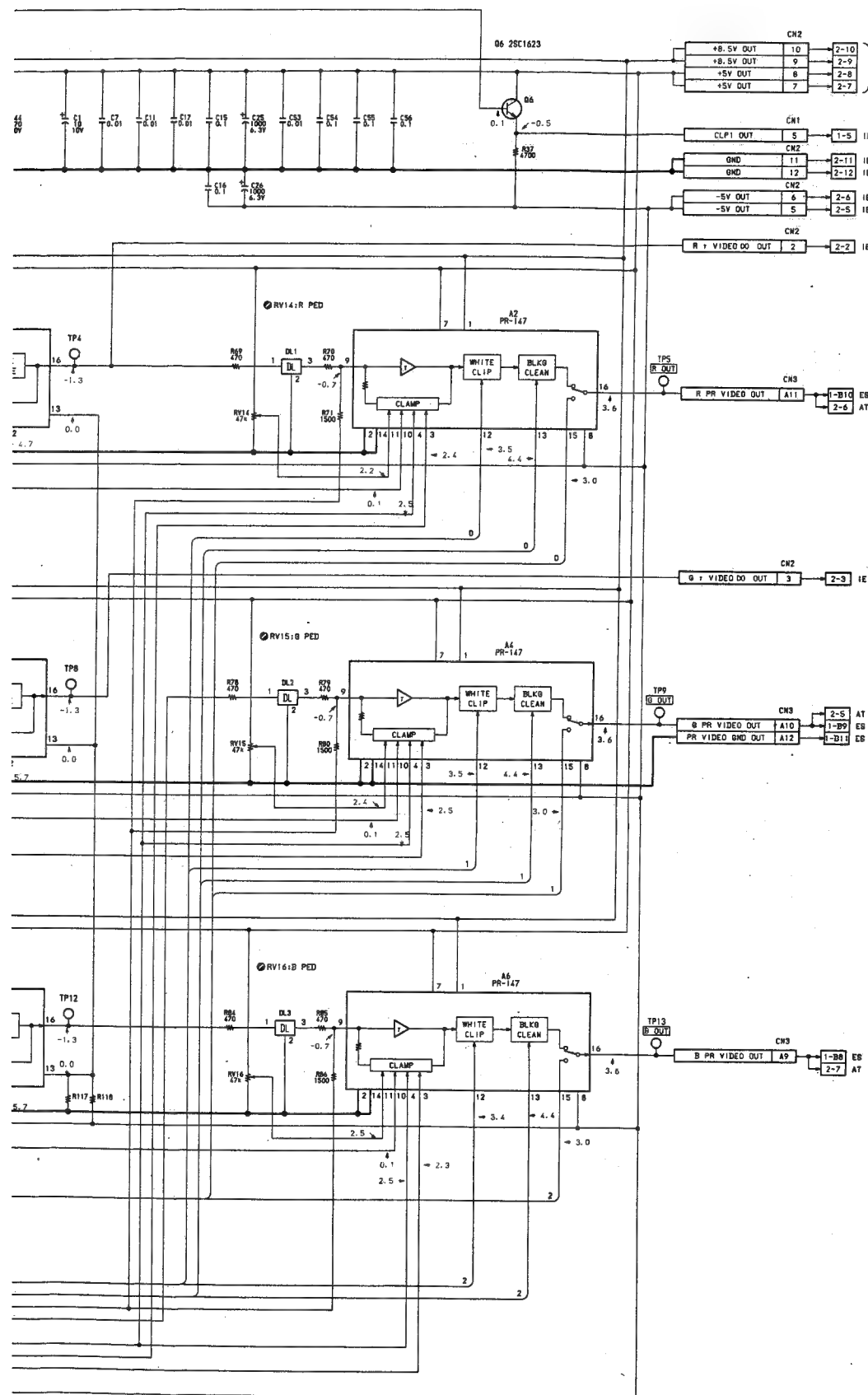
D

E

**F**

**G**



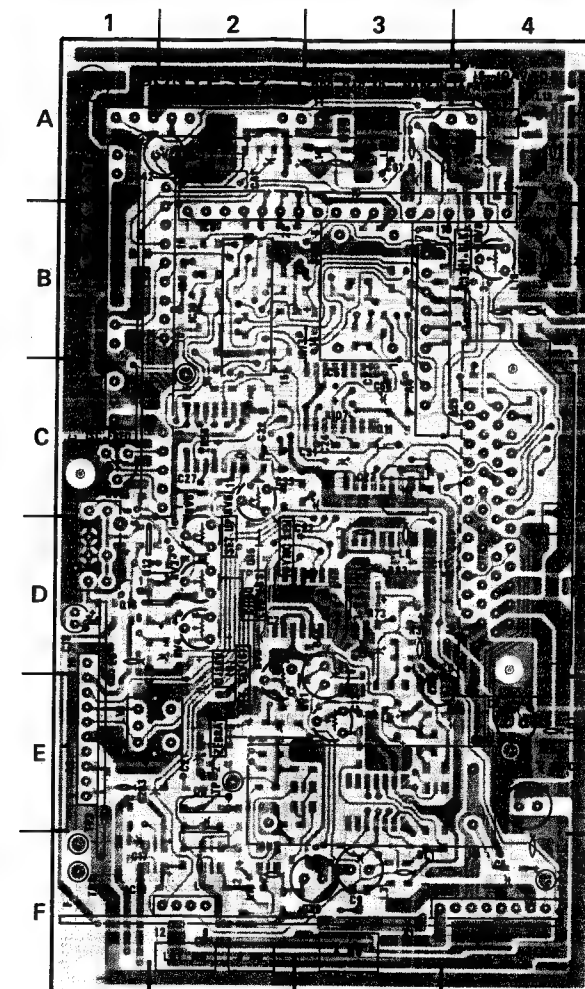


**PR-148 BOARD**  
**PR-147 BOARD**  
**VA-105R/G/B BOARD**  
DXC-327 (J. UC)  
DXC-327P (EK)

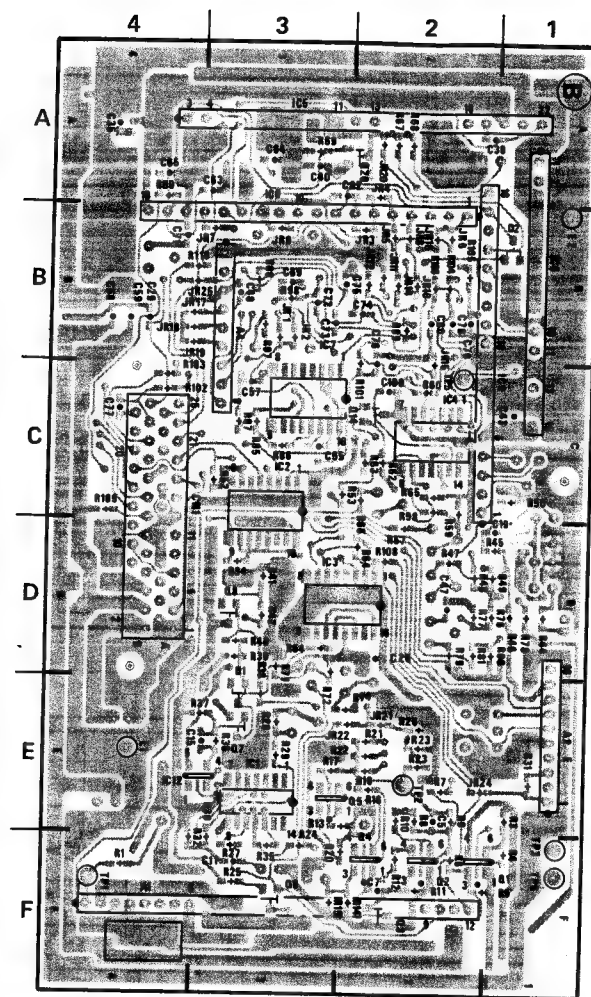
# ES-2 BOARD

ES-2 (1-636-646-12)

CN1	D-4	TP1	F-4
DL1	F-3	TP2	E-2
		TP5	C-2
D1	D-3		
D2	B-1		
E1	E-4		
FL1	D-1		
IC1	E-3		
IC2	C-3		
IC3	D-3		
IC4	C-2		
IC5	A-4		
IC6	B-1		
IC7	B-3		
IC8	B-2		
IC9	B-2		
IC10	B-2		
IC11	D-3		
IC12	E-4		
IC13	B-4		
JR2	B-3		
JR3	B-2		
JR4	A-2		
JR6	B-2		
JR8	B-2		
JR9	B-3		
JR13	B-3		
JR14	B-2		
JR15	B-2		
JR18	B-4		
JR20	A-2		
JR22	E-2		
JR23	E-2		
LV1	E-1		
Q1	F-1		
Q2	F-2		
Q3	F-2		
Q4	F-2		
Q5	E-2		
Q6	F-3		
Q7	E-3		
Q8	D-3		
Q9	D-3		
Q11	C-3		
Q12	D-1		
Q13	D-1		
Q14	C-2		
Q15	D-2		
Q20	A-2		
RV1	E-3		
RV2	D-2		
RV3	D-2		
RV4	D-2		
RV5	C-2		
RV6	C-2		
RV7	C-1		
RV8	B-4		



1-636-646-12 COMPONENT SIDE



1-636-646-12 SOLDERING SIDE

ES-2 (1-636-646-12)

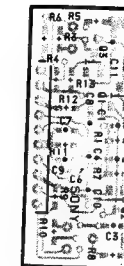
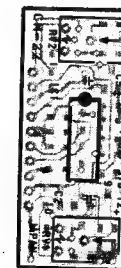
CN1	D-4	TP1	F-4
DL1	F-3	TP2	E-2
		TP5	C-2
D1	D-3		
D2	B-1		
E1	E-4		
FL1	D-1		
IC1	E-3		
IC2	C-3		
IC3	D-3		
IC4	C-2		
IC5	A-4		
IC6	B-1		
IC7	B-3		
IC8	B-2		
IC9	B-2		
IC10	B-2		
IC11	D-3		
IC12	E-4		
IC13	B-4		
JR2	B-3		
JR3	B-2		
JR4	A-2		
JR6	B-2		
JR8	B-2		
JR9	B-3		
JR13	B-3		
JR14	B-2		
JR15	B-2		
JR18	B-4		
JR20	A-2		
JR22	E-2		
JR23	E-2		
LV1	E-1		
Q1	F-1		
Q2	F-2		
Q3	F-2		
Q4	F-2		
Q5	E-2		
Q6	F-3		
Q7	E-3		
Q8	D-3		
Q9	D-3		
Q11	C-3		
Q12	D-1		
Q13	D-1		
Q14	C-2		
Q15	D-2		
Q20	A-2		
RV1	E-3		
RV2	D-2		
RV3	D-2		
RV4	D-2		
RV5	C-2		
RV6	C-2		
RV7	C-1		
RV8	B-4		

BKG-4 BOARD (NTSC ONLY)



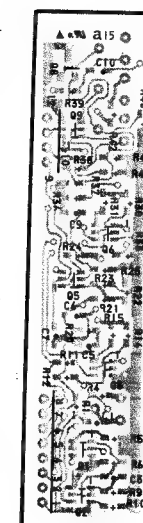
1-627-921-11 COMPONENT SIDE 1-627-921-11 SOLDERING SIDE

CM-22 BOARD



1-627-918-12 COMPONENT SIDE 1-627-918-12 SOLDERING SIDE

MX-18 BOARD



1-627-919-12 COMPONENT SIDE 1-627-919-12 SOLDERING SIDE



# ES-2 BOARD

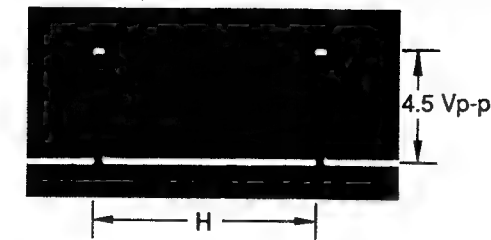
## 注意:

1. DC電圧はデジタル電圧計による値。
2. 波形写真、及びDC電圧は下記条件での測定。
  - ・グレースケールチャートを撮像し、波形モニターにて、ビデオ出力の白レベルが100 IREになる様にレンズ絞りをセットする。
  - ・ GAIN : 0 dB
  - ・ WHITE BAL : PRE
  - ・ ABL : OFF
  - ・ SHUTTER : OFF
  - ・ ZEBRA : OFF
  - ・ VF MARKER : OFF
  - ・ PHASE : 0°
  - ・ BARS : ON

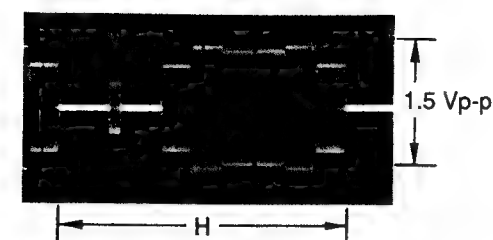
## NOTE:

1. All voltage are DC, measured with a digital voltmeter.
2. All waveforms are taken and DC voltage is measured in condition below.
  - Shoot the grayscale chart. Adjust lens iris so that a white level is 100 IRE on the waveform monitor.
  - GAIN : 0 dB
  - WHITE BAL : PRE
  - ABL : OFF
  - SHUTTER : OFF
  - ZEBRA : OFF
  - VF MARKER : OFF
  - PHASE : 0°
  - BARS : ON

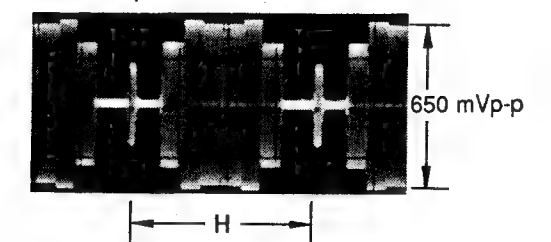
MX-18 12 pin



TP4



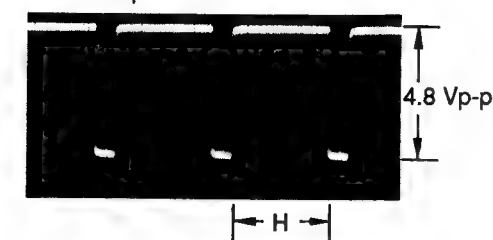
CN1-A11 pin



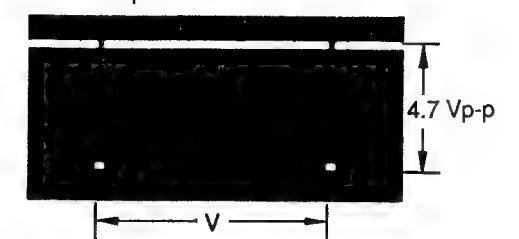
TP5



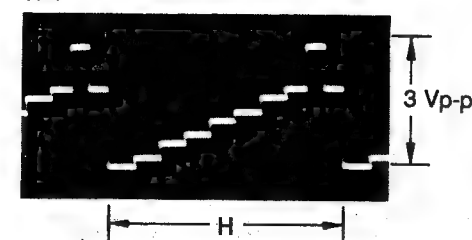
CN1-B20 pin



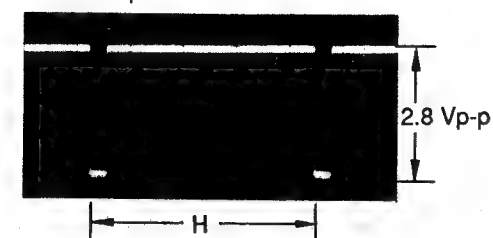
CN1-B23 pin



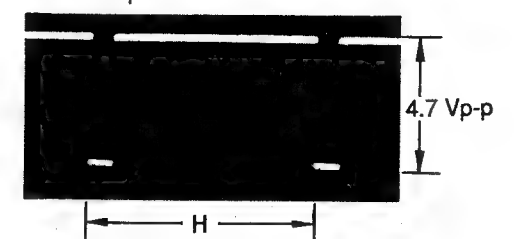
TP1



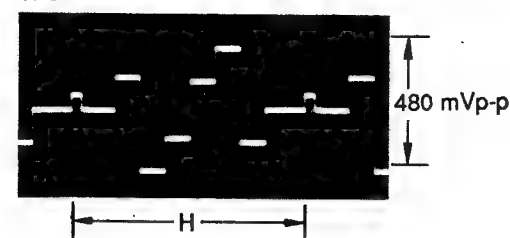
CN1-A21 pin



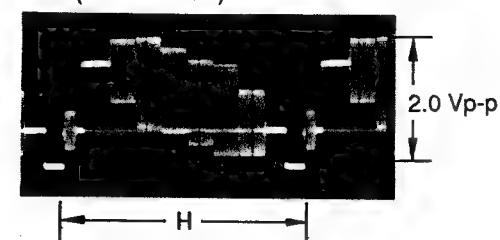
CN1-B21 pin



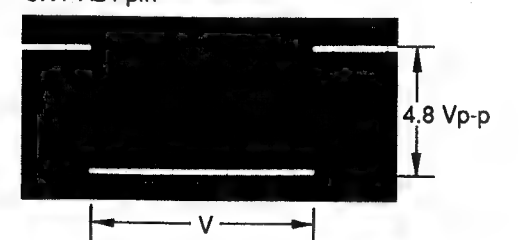
TP3



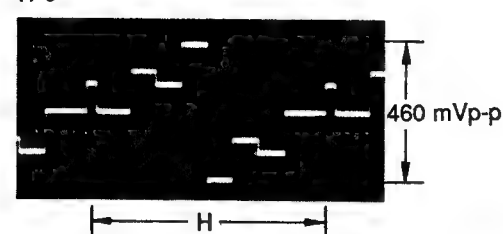
TP2 (VIDEO OUT)



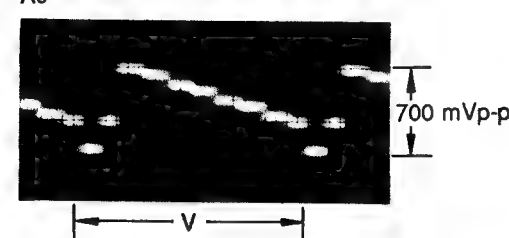
CN1-A24 pin



TP6



A9

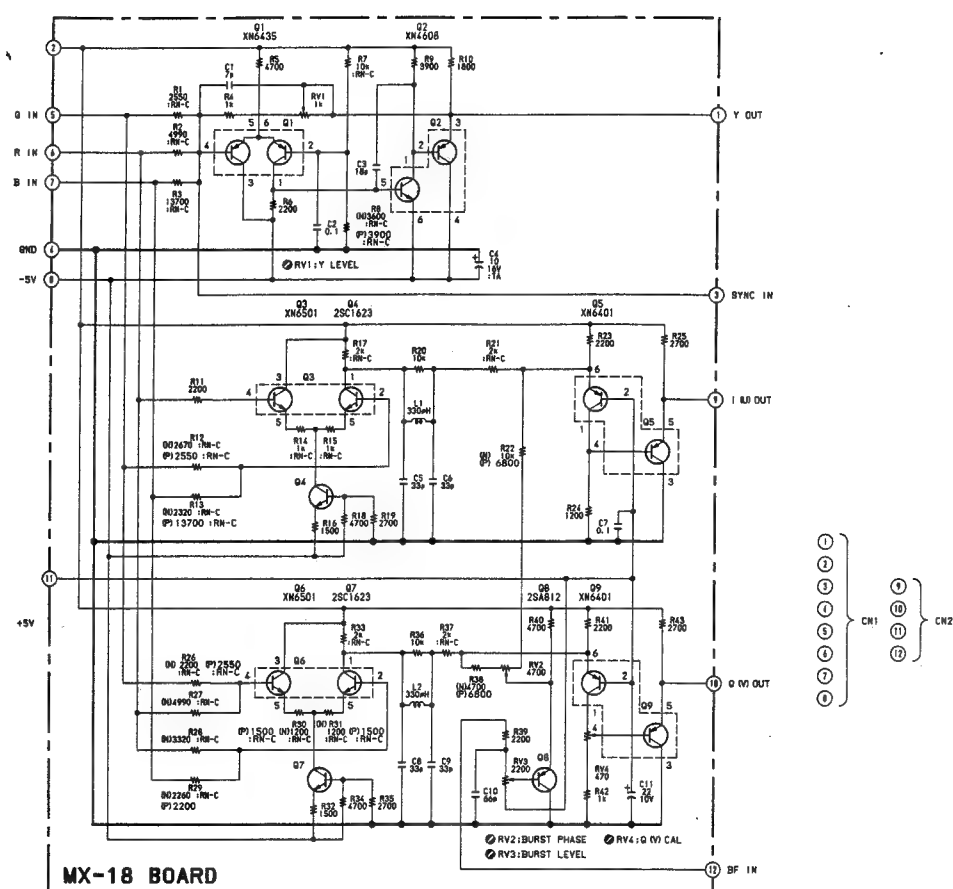


DXC-327 (J, UC)  
DXC-327P (EK)

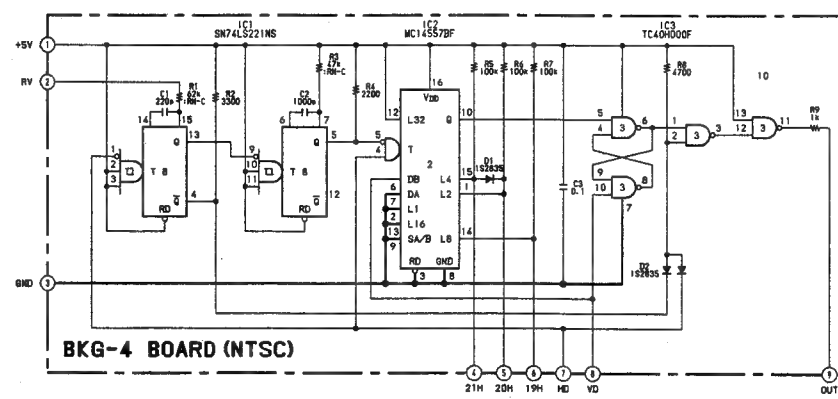


C-42

G



CM-22 BOARD



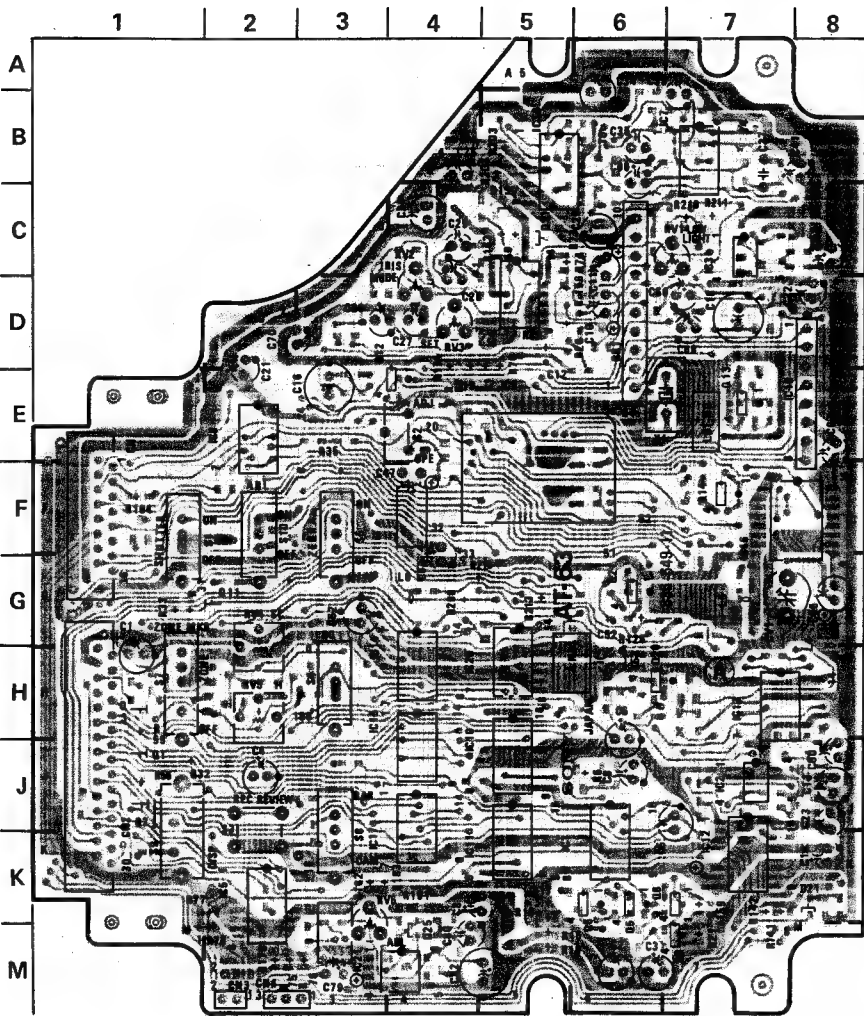
**BKG-4 BOARD (NTSC)**

DXC-327 (J, UC)  
DXC-327P (EK)

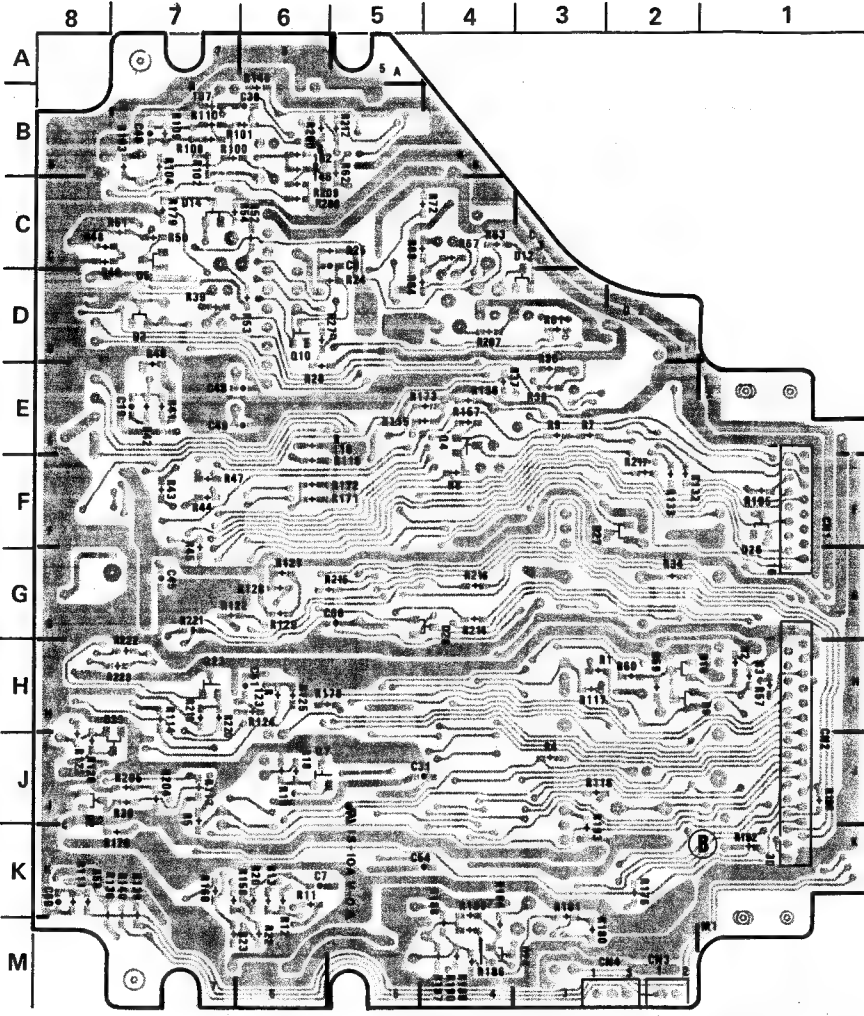
AT-63 BOARD

AT-63 (1-636-649-11)

CN1	E-1	RV1	C-7
CN2	J-1	RV2	C-4
CN3	M-2	RV3	D-4
CN4	M-2	RV4	G-2
CV1	G-8	RV5	H-2
		RV6	K-3
D2	J-8	S1	F-2
D3	D-8	S2	E-4
D5	D-7	S3	J-2
D9	H-1	S4	H-3
D10	H-1	S5	F-3
D11	C-5	S7	H-1
D12	C-3	S8	J-3
D13	C-5	S9	K-1
D14	C-7	S10	F-2
D21	K-8		
D23	H-8	X1	E-6
D24	M-3		
D25	M-4		
D26	F-1		
D27	F-3		
D28	G-4		
IC1	K-5		
IC2	J-7		
IC3	C-7		
IC4	D-5		
IC5	K-2		
IC7	B-7		
IC8	E-2		
IC9	E-5		
IC10	J-4		
IC11	K-4		
IC12	K-7		
IC13	H-7		
IC14	H-3		
IC15	H-3		
IC16	F-7		
IC17	K-3		
IC18	B-5		
IC19	E-8		
IC20	H-4		
IC21	M-3		
Q1	J-1		
Q2	J-1		
Q3	H-1		
Q4	E-4		
Q5	M-6		
Q6	M-6		
Q7	J-6		
Q8	K-6		
Q9	M-7		
Q10	D-6		
Q11	G-2		
Q12	D-3		
Q13	E-7		
Q14	F-7		
Q20	H-6		
Q21	G-6		
Q23	H-7		
RB1	D-6		



1-636-649-11 COMPONENT SIDE



1-636-649-11 SOLDERING SIDE

AT-63 (1-636-649-11)

CN1	E-1	RV1	C-7
CN2	J-1	RV2	C-4
CN3	M-2	RV3	D-4
CN4	M-2	RV4	G-2
CV1	G-8	RV5	H-2
		RV6	K-3
D2	J-8	S1	F-2
D3	D-8	S2	E-4
D5	D-7	S3	J-2
D9	H-1	S4	H-3
D10	H-1	S5	F-3
D11	C-5	S7	H-1
D12	C-3	S8	J-3
D13	C-5	S9	K-1
D14	C-7	S10	F-2
D21	K-8		
D23	H-8	X1	E-6
D24	M-3		
D25	M-4		
D26	F-1		
D27	F-3		
D28	G-4		
IC1	K-5		
IC2	J-7		
IC3	C-7		
IC4	D-5		
IC5	K-2		
IC7	B-7		
IC8	E-2		
IC9	E-5		
IC10	J-4		
IC11	K-4		
IC12	K-7		
IC13	H-7		
IC14	H-3		
IC15	H-3		
IC16	F-7		
IC17	K-3		
IC18	B-5		
IC19	E-8		
IC20	H-4		
IC21	M-3		
Q1	J-1		
Q2	J-1		
Q3	H-1		
Q4	E-4		
Q5	M-6		
Q6	M-6		
Q7	J-6		
Q8	K-6		
Q9	M-7		
Q10	D-6		
Q11	G-2		
Q12	D-3		
Q13	E-7		
Q14	F-7		
Q20	H-6		
Q21	G-6		
Q23	H-7		
RB1	D-6		

# AT-63 BOARD

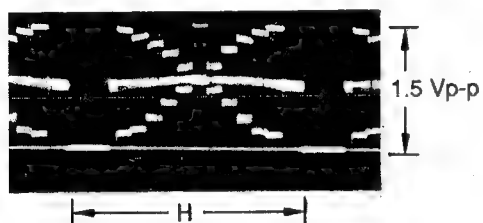
## 注意:

1. DC電圧はデジタル電圧計による値。
2. 波形写真、及びDC電圧は下記条件での測定。
  - グレースケールチャートを撮像し、波形モニターにて、ビデオ出力の白レベルが100 IREになる様にレンズ絞りをセットする。
  - GAIN : 0 dB
  - WHITE BAL : PRE
  - ABL : OFF
  - SHUTTER : OFF
  - ZEBRA : OFF
  - VF MARKER : OFF
  - PHASE : 0°
  - BARS : OFF

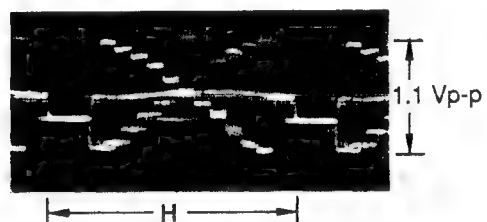
## NOTE:

1. All voltage are DC, measured with a digital voltmeter.
2. All waveforms are taken and DC voltage is measured in condition below.
  - Shoot the grayscale chart. Adjust lens iris so that a white level is 100 IRE on the waveform monitor.
  - GAIN : 0 dB
  - WHITE BAL : PRE
  - ABL : OFF
  - SHUTTER : OFF
  - ZEBRA : OFF
  - VF MARKER : OFF
  - PHASE : 0°
  - BARS : OFF

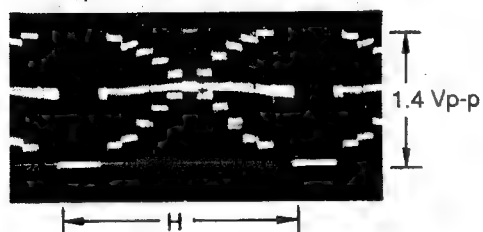
CN2-5 pin



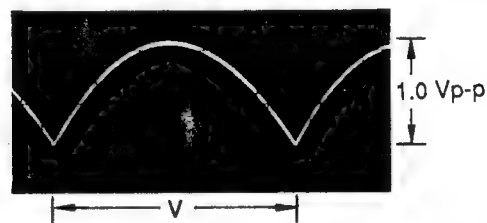
IC4-5 pin



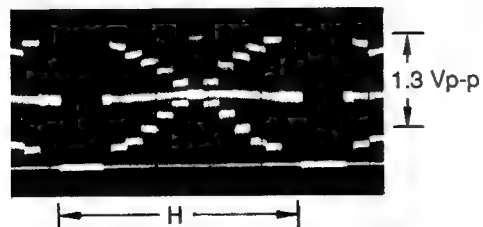
CN2-6 pin



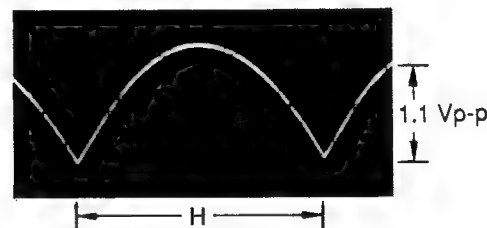
IC7-8 pin



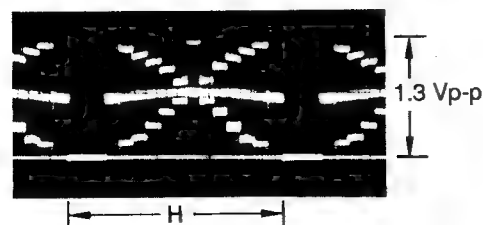
CN2-7 pin



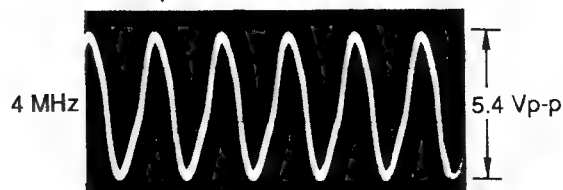
IC7-14 pin



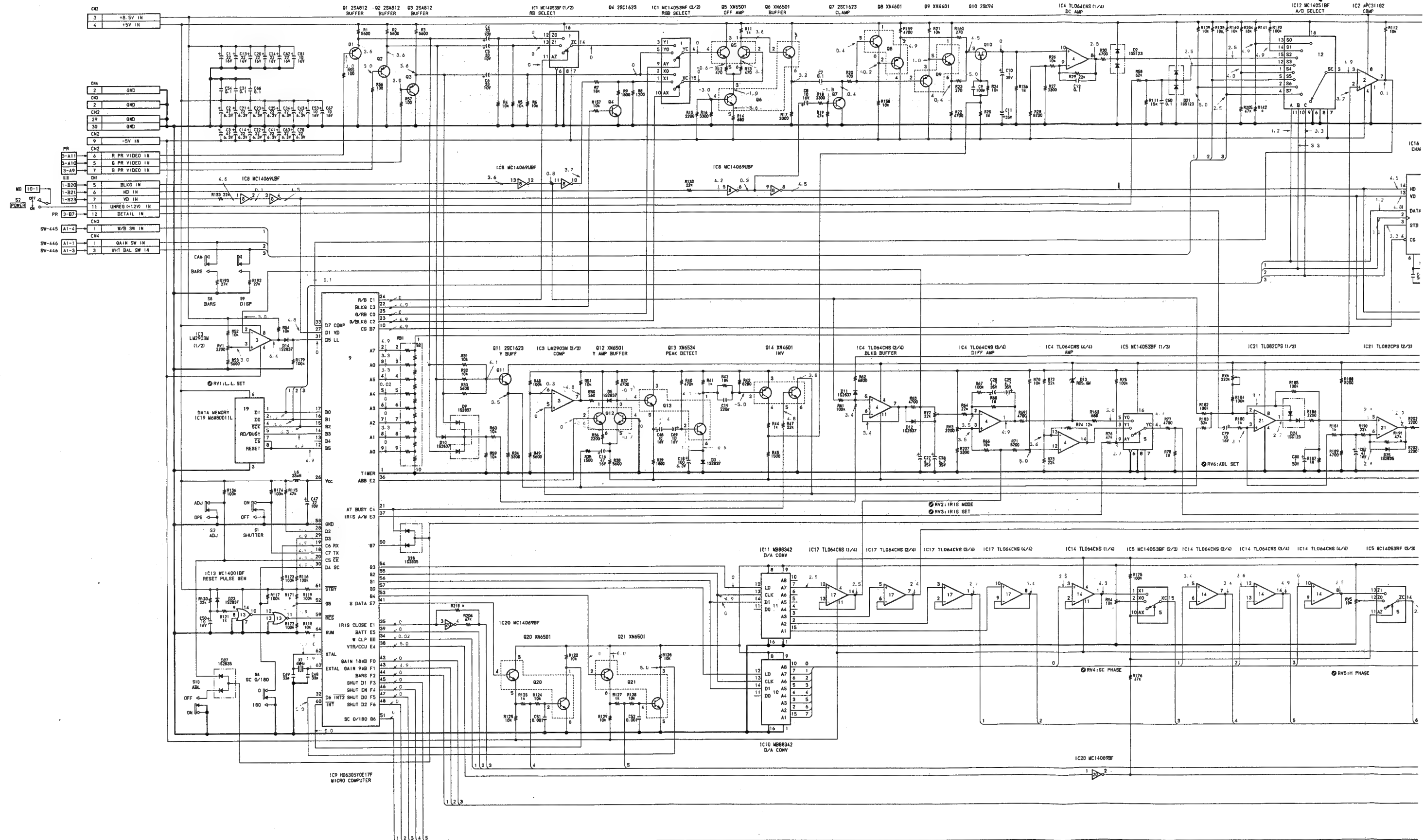
Q11-emitter



IC9-62 pin



AT-63 BOARD



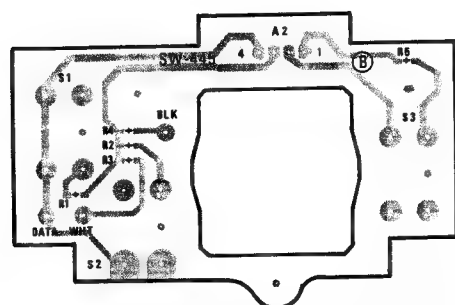




DXC-327 (J, UC)  
DXC-327P (EK)

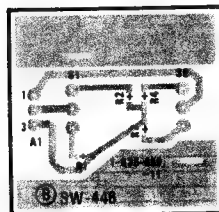
**B-DXC327-AT63/M**

## SW-445 BOARD



1-636-658-11 SOLDERING SIDE

## SW-446 BOARD



1-636-659-11 SOLDERING SIDE

## MB-325 BOARD

**MB-325 (1-636-657-12)**

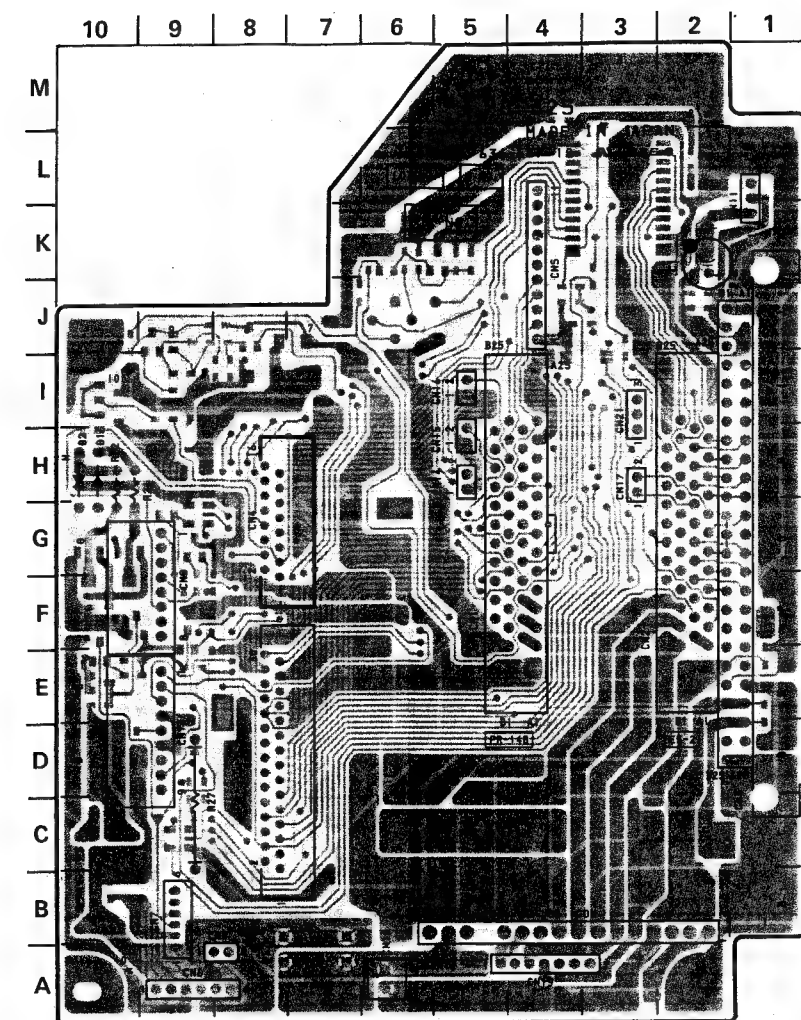
CN1	F-5
CN2	F-3
CN3	C-1
CN4	G-8
CN5	L-5
CN6	A-9
CN7	B-9
CN8	B-8
CN9	F-9
CN10	A-6
CN11	K-1
CN13	D-9
CN14	H-6
CN15	H-6
CN16	I-6
CN17	H-4
CN19	A-4
CN21	I-4
CN22	D-8

D1	H-10
D2	H-10
D3	E-10

IC1	C-9
IC2	H-9
IC3	K-2

Q1	I-10
Q2	I-10
Q3	G-9
Q4	H-9
Q5	F-9
Q6	F-10
Q7	F-10
Q8	G-10
Q9	G-10
Q10	J-5
Q11	K-6
Q12	J-8
Q13	I-9
Q14	I-9

S1 J-5  
S2 J-7



1-636-657-11, 12 COMPONENT SIDE



MB-325 BOARD

MB-325 (1-636-657-12)

- CN1

F-5
- CN2

F-3
- CN3

C-1
- CN4

G-8
- CN5

L-5
- CN6

A-9
- CN7

B-9
- CN8

B-8
- CN9

F-9
- CN10

A-6
- CN11

K-1
- CN13

D-9
- CN14

H-6
- CN15

H-6
- CN16

I-6
- CN17

H-4
- CN19

A-4
- CN21

I-4
- CN22

D-8
- D1

H-10
- D2

H-10
- D3

E-10
- IC1

C-9
- IC2

H-9
- IC3

K-2
- Q1

I-10
- Q2

I-10
- Q3

G-9
- Q4

H-9
- Q5

F-9
- Q6

F-10
- Q7

F-10
- Q8

G-10
- Q9

G-10
- Q10

J-5
- Q11

K-6
- Q12

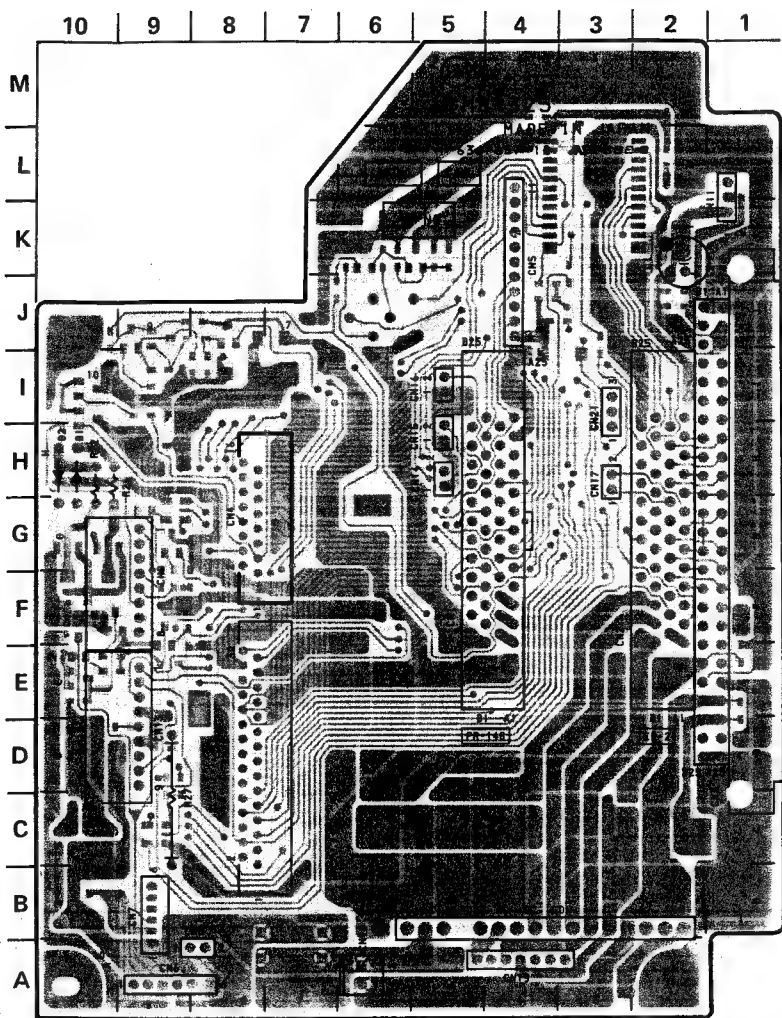
J-8
- Q13

I-9
- Q14

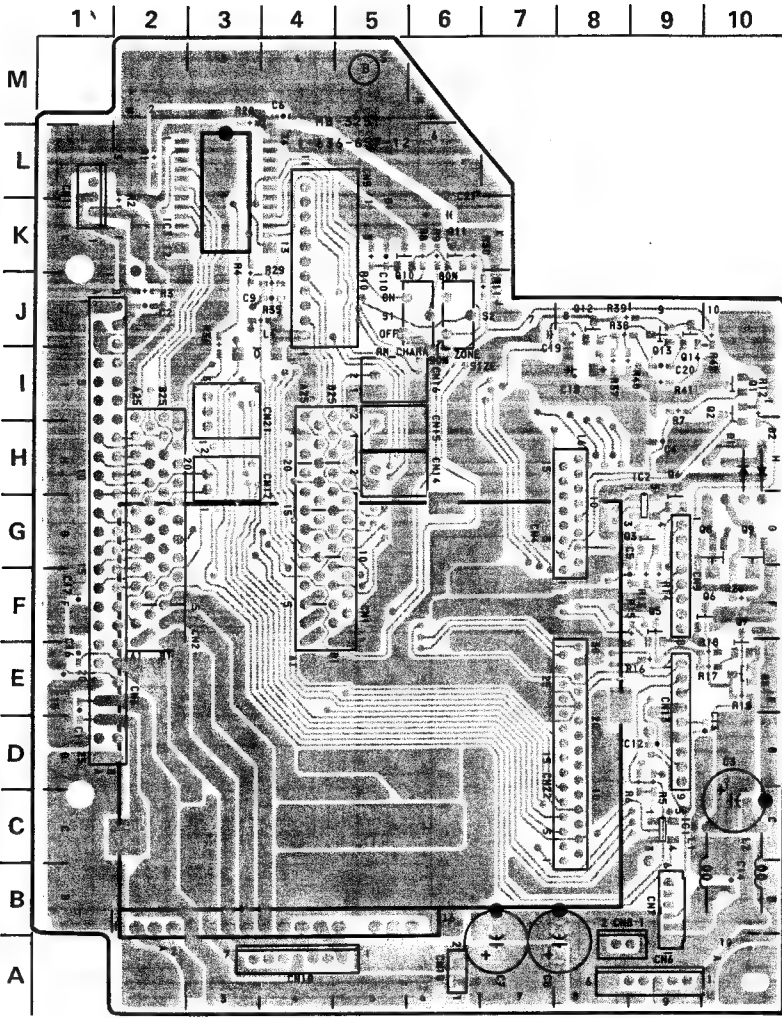
I-9
- S1

J-5
- S2

J-7



1-636-657-11, 12 COMPONENT SIDE



1-636-657-11, 12 SOLDERING SIDE

MB-325 (1-636-657-12)

- CN1

F-5
- CN2

F-3
- CN3

C-1
- CN4

G-8
- CN5

L-5
- CN6

A-9
- CN7

B-9
- CN8

B-8
- CN9

F-9
- CN10

A-6
- CN11

K-1
- CN13

D-9
- CN14

H-6
- CN15

H-6
- CN16

I-6
- CN17

H-4
- CN19

A-4
- CN21

I-4
- CN22

D-8
- D1

H-10
- D2

H-10
- D3

E-10
- IC1

C-9
- IC2

H-9
- IC3

K-2
- Q1

I-10
- Q2

I-10
- Q3

G-9
- Q4

H-9
- Q5

F-9
- Q6

F-10
- Q7

F-10
- Q8

G-10
- Q9

G-10
- Q10

J-5
- Q11

K-6
- Q12

J-8
- Q13

I-9
- Q14

I-9
- S1

J-5
- S2

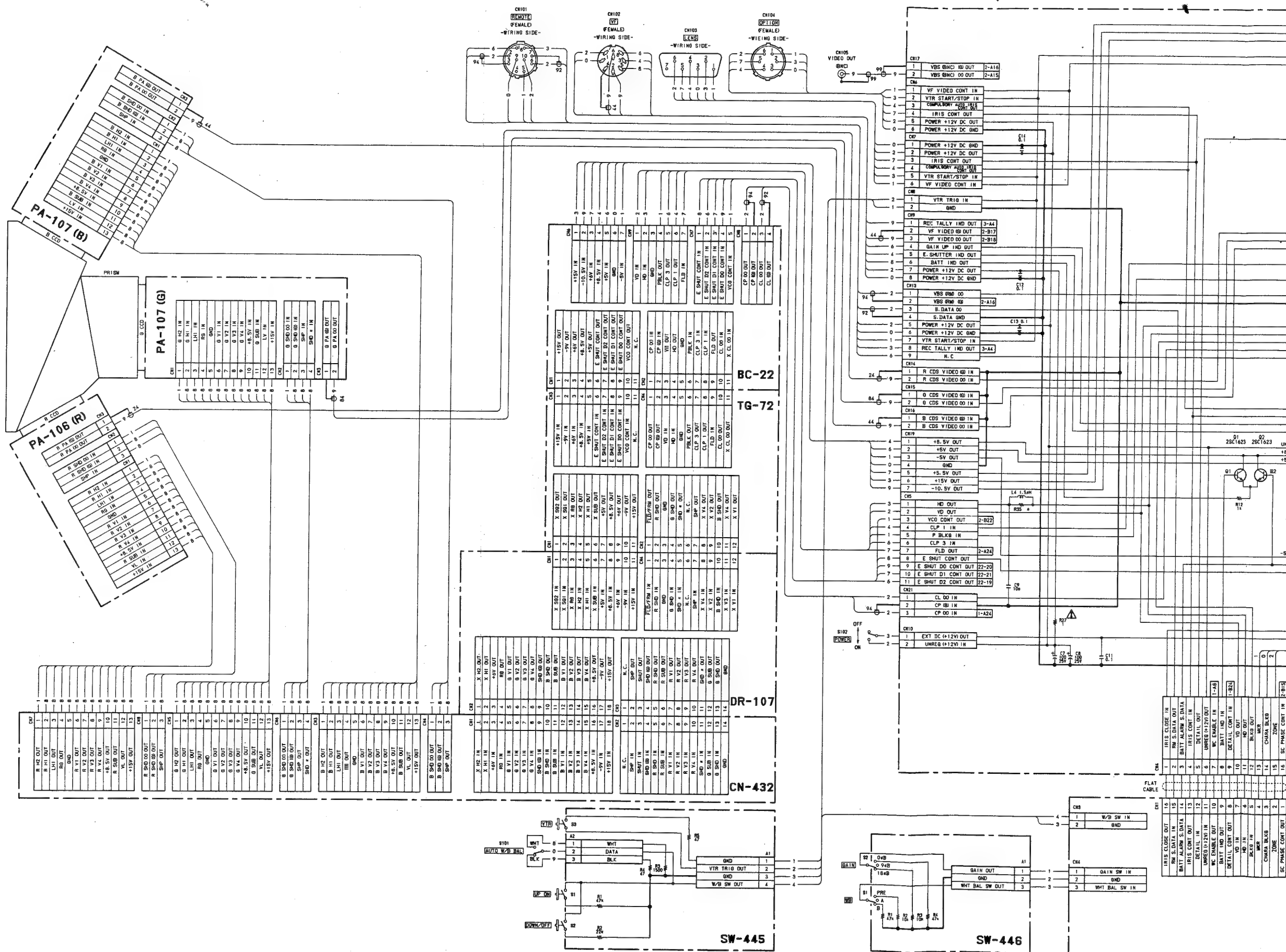
J-7

# FRAME

MB-325 BOARD  
SW-445 BOARD  
SW-446 BOARD

MB-325  
SW-445, SW-446 FRAME

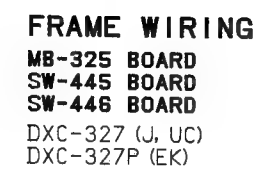
MB-325  
SW-445, SW-446 FRAME



DXC-327 (J, UC)  
DXC-327P (EK)

C-57


C-58



## SECTION D SPARE PARTS

### PARTS INFORMATION

#### 1. Safety Related Component Warning

Components identified by shading marked with  on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

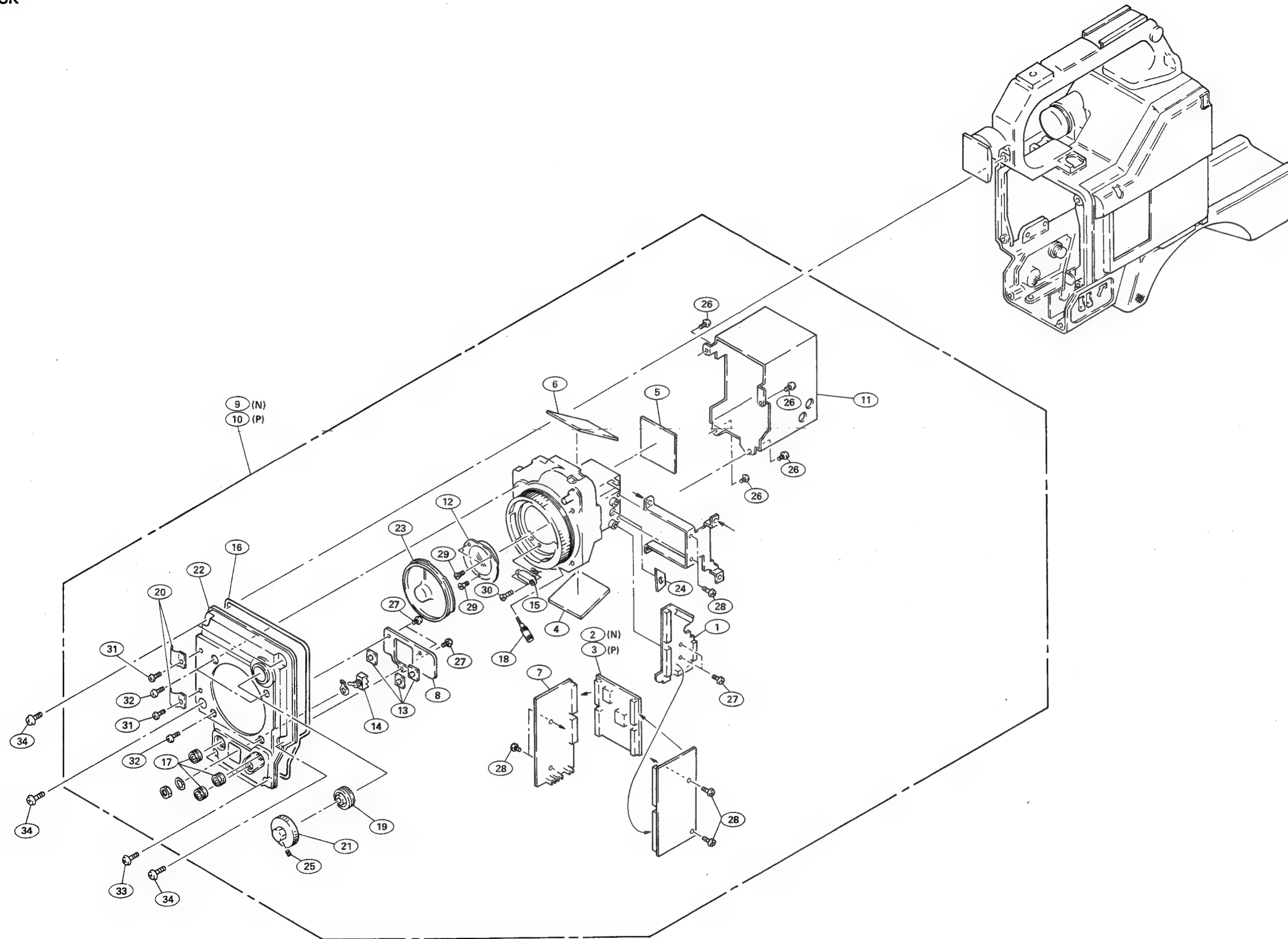
2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes" or "standardization of genuine parts."** This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present." Regarding engineering parts and diagrams changes in our engineering department, refer to SONY service bulletins and service manual supplements.
3. The parts marked with "S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Orders for parts marked with "O" will be processed, but allow for additional delivery time.
4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.
5. All capacitors are in micro farads unless otherwise specified.  
All inductors are in micro henries unless otherwise specified.  
All resistors are in ohms.

## EXPLODED VIEW

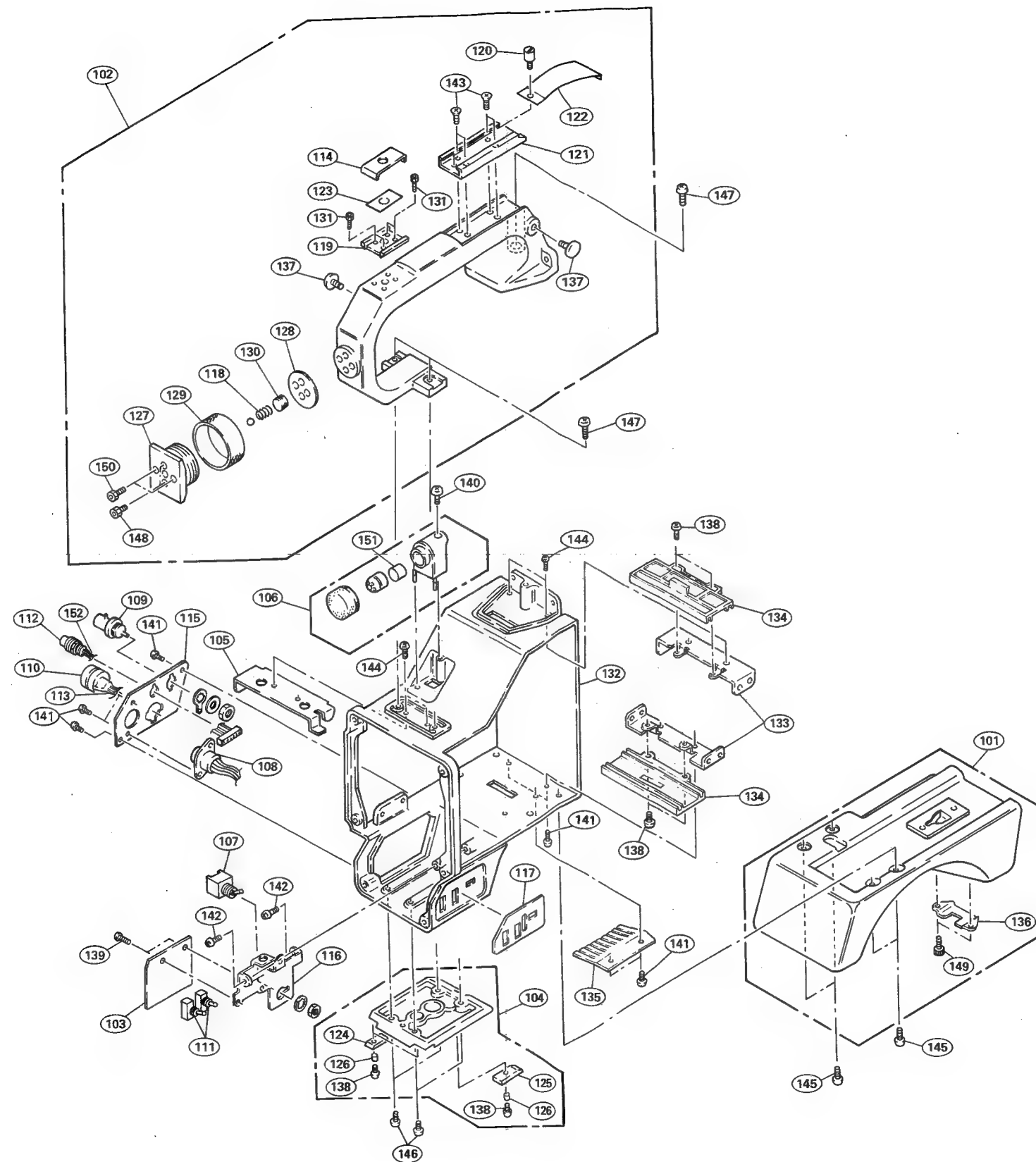
## CCD BLOCK

No.	Part No.	SP Description
1	A-7515-210-A o	MOUNTED CIRCUIT BOARD, CN-432
2	A-7515-216-A o	MOUNTED CIRCUIT BOARD, TG-72(N) (for DXC-327)
3	A-7515-217-A o	MOUNTED CIRCUIT BOARD, TG-72(P) (for DXC-327P)
4	A-7515-218-A o	MOUNTED CIRCUIT BOARD, PA-106
5	A-7515-219-A o	MOUNTED CIRCUIT BOARD, PA-107G
6	A-7515-220-A o	MOUNTED CIRCUIT BOARD, PA-107B
7	A-7515-221-A o	MOUNTED CIRCUIT BOARD, BC-22
8	A-7520-515-A o	MOUNTED CIRCUIT BOARD, SW-445
9	A-7575-155-A s	CCD UNIT (N) (for DXC-327)
10	A-7575-156-A s	CCD UNIT (P) (for DXC-327P)
11	X-3165-232-1 o	COVER ASSY, BLOCK SHIELD
12	1-547-463-11 o	FILTER UNIT, OPTICAL
13	1-553-739-21 s	SWITCH, KEY BOARD
14	1-554-486-00 s	SWITCH, TOGGLE "AUTO W/B BAL"
15	1-942-381-12 s	HARNESS (LENS)
16	3-672-253-11 o	RUBBER, CONDUCTIVE
17	3-676-244-00 s	COVER, SWITCH
18	3-678-629-00 s	LEVER, MOUNT
19	3-678-632-00 o	PACKING, KNOB
20	3-678-684-00 o	HOLDER, CABLE
21	3-699-047-01 s	KNOB, FILTER
22	3-699-106-01 o	PANEL, FRONT
23	3-699-144-01 s	CAP, MOUNT
24	3-699-182-01 o	INSULATOR (2)
25	3-701-506-01 s	SET SCREW, DOUBLE POINT 3X4
26	7-621-770-87 s	SCREW +B 2.6X5
27	7-621-772-18 s	SCREW +B 2X4
28	7-621-773-86 s	SCREW +B 2.6X4
29	7-627-452-28 s	SCREW, PRECISION +H 2X4
30	7-627-552-48 s	SCREW, PRECISION +P 1.7X4
31	7-627-556-38 s	SCREW +P 2.6X4.0
32	7-682-547-04 s	SCREW +B 3X6
33	7-682-549-09 s	SCREW +B 3X10
34	7-682-550-09 s	SCREW +B 3X12

CCD BLOCK



## CHASSIS (1) BLOCK



-----  
CHASSIS (1) BLOCK  
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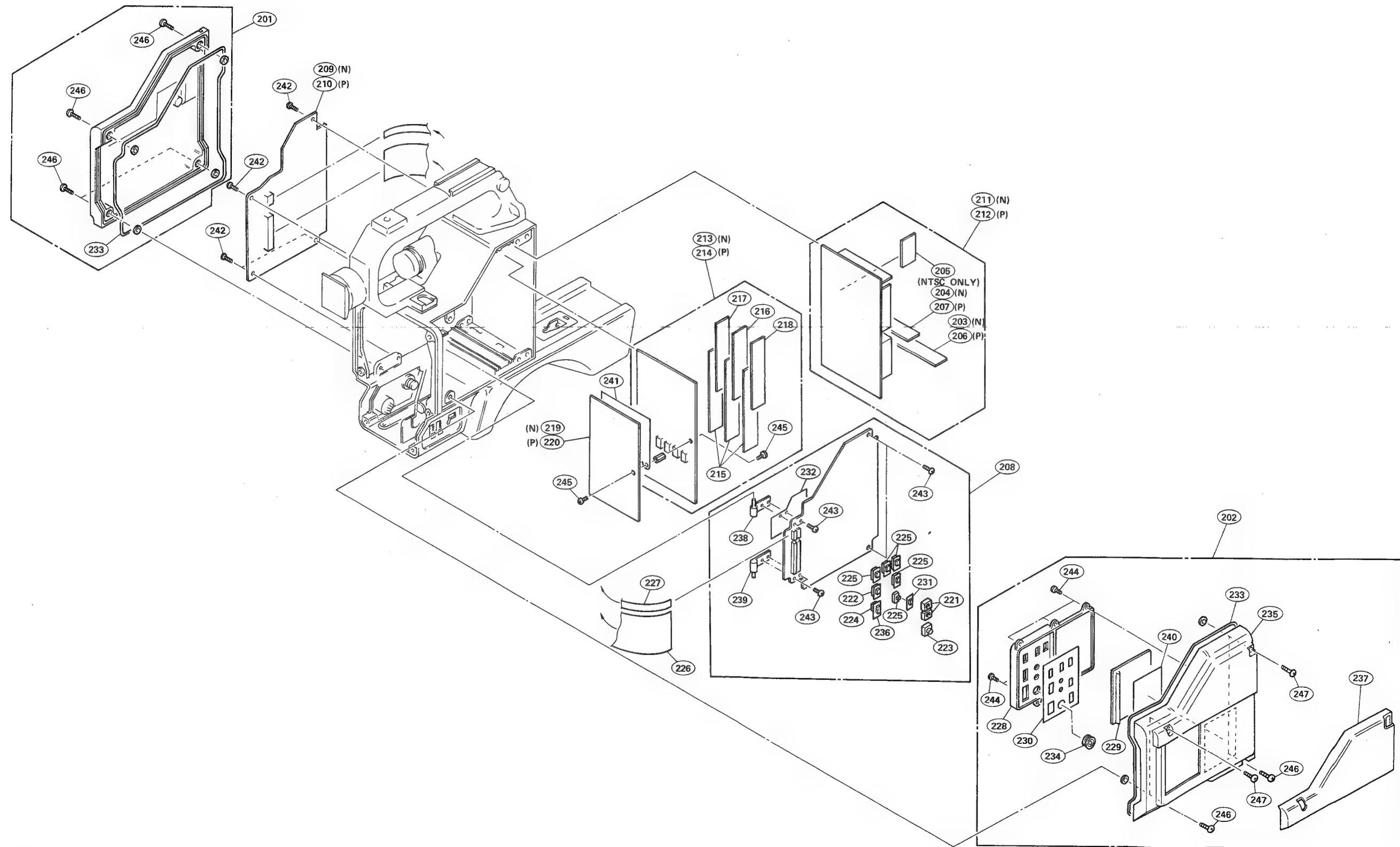
No.	Part No.	SP Description
101	A-7420-147-B	s PAD ASSY, SHOULDER
102	A-7420-197-A	o HANDLE ASSY
103	A-7520-516-A	o MOUNTED CIRCUIT BOARD, SW-446
104	X-3664-212-2	s SHOE ASSY (B), T
105	X-3699-015-1	o BRACKET(B) ASSY
106	1-542-112-11	s MICROPHONE (C-2025)
107	1-553-972-00	s SWITCH, TOGGLE "POWER"
108	1-561-320-12	s SOCKET, DIN 8P "VF"
109	1-561-781-11	s CONNECTOR, BNC "VIDEO OUT"
110	1-562-782-21	s CONNECTOR 10P FEMALE "REMOTE"
111	1-570-985-11	s SWITCH, TOGGLE "GAIN" "WB"
112	1-942-381-12	s HARNESS (LENS)
113	1-946-627-11	o HARNESS (RM)
114	2-277-468-01	o PLATE, ORNAMENTAL, CAMERA SHOE
115	3-166-292-01	o PLATE, CONNECTOR
116	3-166-293-01	o STOPPER, PC BOARD
117	3-166-298-01	o LABEL, SW
118	3-641-622-00	s SPRING, COMPRESSION
119	3-657-700-00	s BRACKET, ACCESSORY
120	3-664-213-00	o SCREW, STOPPER
121	3-664-218-00	o SHUE
122	3-664-228-00	o PLATE, SPRING
123	3-672-213-00	o SHEET, ADHESIVE
124	3-675-963-02	s FOOT, FRONT, RUBBER
125	3-675-964-01	s FOOT, REAR, RUBBER
126	3-675-965-01	s SPACER (2.6X2)
127	3-682-718-02	o SHOE, VF SLIDE
128	3-682-758-01	o SPACER
129	3-682-759-01	o RING, LOCK
130	3-682-760-01	o SCREW (M7-0.75), ADJUSTMENT
131	3-689-039-11	s BOLT (M2X6), HOLE, HEXAGON
132	3-699-104-01	o CABINET
133	3-699-110-01	o BRACKET (A)
134	3-699-131-01	o GUIDE, PC BOARD
135	3-699-145-01	o PLATE, GROUND
136	3-699-176-01	o STOPPER (2)
137	3-725-907-01	s BUSHING, BLIND
138	7-621-770-87	s SCREW +B 2.6X5
139	7-621-772-18	s SCREW +B 2X4
140	7-621-772-30	s SCREW +B 2X6
141	7-621-773-86	s SCREW +B 2.6X4
142	7-621-775-20	s SCREW +B 2.6X5
143	7-682-247-04	s SCREW +K 3X6
144	7-682-546-09	s SCREW +B 3X5
145	7-682-547-09	s SCREW +B 3X6
146	7-682-561-09	s SCREW +B 4X8
147	7-682-562-09	s SCREW +B 4X10
148	7-683-410-04	s BOLT, HEXAGON SOCKET 3X20
149	7-683-412-05	s BOLT, HEXAGON SOCKET 2.6X6
150	7-683-425-04	s BOLT, HEXAGON SOCKET 4X20
151	8-814-189-31	s MICROPHONE, BUILT-IN (C-1007A)
152	1-562-222-41	o CONNECTOR, 6P FEMALE "LENS"



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CHASSIS (2) BLOCK  
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No.	Part No.	SP Description	
201	A-7420-143-A	o PLATE (LEFT) ASSY, SIDE	236
202	A-7420-188-A	o PLATE (RIGHT) ASSY, SIDE	237
203	A-7513-840-A	o MOUNTED CIRCUIT BOARD, MX-18A(N) (for DXC-327)	238
204	A-7513-841-A	o MOUNTED CIRCUIT BOARD, CM-22(N) (for DXC-327)	239
205	A-7513-842-A	o MOUNTED CIRCUIT BOARD, BKG-4 (for DXC-327)	240
206	A-7513-844-A	o MOUNTED CIRCUIT BOARD, MX-18A(P) (for DXC-327P)	241
207	A-7513-845-A	o MOUNTED CIRCUIT BOARD, CM-22(P) (for DXC-327P)	242
208	A-7515-211-A	o MOUNTED CIRCUIT BOARD, AT-63	243
209	A-7515-212-A	o MOUNTED CIRCUIT BOARD, MB-325(N) (for DXC-327)	244
210	A-7515-213-A	o MOUNTED CIRCUIT BOARD, MB-325(P) (for DXC-327P)	245
211	A-7515-214-A	o MOUNTED CIRCUIT BOARD, ES-2(N) (for DXC-327)	246
212	A-7515-215-A	o MOUNTED CIRCUIT BOARD, ES-2(P) (for DXC-327P)	247
213	A-7515-223-A	o MOUNTED CIRCUIT BOARD, PR-148(N) (for DXC-327)	
214	A-7515-224-A	o MOUNTED CIRCUIT BOARD, PR-148(P) (for DXC-327P)	
215	A-7515-225-A	o MOUNTED CIRCUIT BOARD, PR-147	
216	A-7515-226-A	o MOUNTED CIRCUIT BOARD, VA-105R	
217	A-7515-227-A	o MOUNTED CIRCUIT BOARD, VA-105G	
218	A-7515-228-A	o MOUNTED CIRCUIT BOARD, VA-105B	
219	A-7515-229-A	o MOUNTED CIRCUIT BOARD, IE-29(N) (for DXC-327)	
220	A-7515-230-A	o MOUNTED CIRCUIT BOARD, IE-29(P) (for DXC-327P)	
221	1-237-518-21	s RES, ADJ, METAL 10K "PHASE SC/H"	
222	1-553-977-00	s SWITCH, SLIDE "MARKER"	
223	1-554-303-21	s SWITCH, KEY BOARD "REC REVIEW"	
224	1-554-364-00	s SWITCH, SLIDE "DISP CHG"	
225	1-570-865-11	s SWITCH, SLIDE "SHUTTER" "ZEBRA" "PHASE" "BARS"	
226	1-574-145-11	s WIRE, FLAT TYPE (30 CORE)	
227	1-590-168-11	s WIRE, FLAT TYPE (16 CORE)	
228	3-166-294-01	o FRAME, SLIDE DOOR	
229	3-166-295-01	o DOOR, SLIDE	
230	3-166-296-01	o PLATE, SWITCH	
231	3-167-445-01	s KNOB, SWITCH	
232	3-168-689-01	o PLATE (2) SHIELD AT	
233	3-672-253-11	o RUBBER, CONDUCTIVE	
234	3-676-244-00	s COVER, SWITCH	
235	3-699-107-01	o PLATE (RIGHT), SIDE	
	3-699-125-01	s KNOB, DISPCHG	
	3-699-137-01	s PAD (C), SIDE	
	3-699-170-01	o BRACKET (UPPER), AT	
	3-699-171-01	o BRACKET (LOWER), AT	
	3-699-172-01	o SHEET, STOPPER	
	3-699-179-01	o PLATE, SHIELD, IE	
	7-621-770-87	s SCREW +B 2.6X5	
	7-621-772-18	s SCREW +B 2X4	
	7-621-772-20	s SCREW +B 2X5	
	7-621-775-08	s SCREW +B 2.6X3	
	7-682-548-09	s SCREW +B 3X8	
	7-682-553-09	s SCREW +B 3X20	

## CHASSIS (2) BLOCK



PACKING MATERIAL AND ACCESSORIES

DXC-327H/327PH		DXC-327K/327PK	
Part. No.	SP Description	Part. No.	SP Description
3-166-614-01	o CARTON, INDIVIDUAL DXC-327H(UC)	3-166-616-01	o CARTON, INDIVIDUAL DXC-327K(UC)
3-166-615-01	o CARTON, INDIVIDUAL DXC-327PH(EK)	3-166-617-01	o CARTON, INDIVIDUAL DXC-327PK(EK)
3-699-154-01	o CUSHION (LOWER)	3-701-630-01	o BAG, POLY
3-699-157-01	o CUSHION (UPPER)	3-752-391-11	s MANUAL, INSTRUCTION DXC-327K(UC)/DXC-327PK(EK)
3-752-391-11	s MANUAL, INSTRUCTION (UC, EK)	3-752-391-31	s MANUAL, INSTRUCTION DXC-327K(UC)/DXC-327PK(EK)
3-759-391-31	s MANUAL, INSTRUCTION (UC, EK)	3-752-391-41	s MANUAL, INSTRUCTION DXC-327PK(EK)
3-759-391-41	s MANUAL, INSTRUCTION (EK)	3-752-391-51	s MANUAL, INSTRUCTION DXC-327PK(EK)
3-759-391-51	s MANUAL, INSTRUCTION (EK)	3-752-391-61	s MANUAL, INSTRUCTION DXC-327PK(EK)
3-752-391-61	s MANUAL, INSTRUCTION (EK)	3-764-889-01	o CHART, ADJUSTMENT
3-764-889-01	o CHART, ADJUSTMENT	7-682-560-09	s SCREW +B4x6
		7-682-563-09	s SCREW +B4x12

DXC-327L/327PL	
Part. No.	SP Description
3-166-618-01	o CARTON, INDIVIDUAL DXC-327L(UC)
3-166-619-01	o CARTON, INDIVIDUAL DXC-327PL(EK)
3-701-630-01	o BAG, POLY
3-752-391-11	s MANUAL, INSTRUCTION DXC-327L(UC)
3-752-391-31	s MANUAL, INSTRUCTION DXC-327L(UC)
3-752-391-41	s MANUAL, INSTRUCTION DXC-327PL(EK)
3-752-391-51	s MANUAL, INSTRUCTION DXC-327PL(EK)
3-752-391-61	s MANUAL, INSTRUCTION DXC-327PL(EK)
3-764-889-01	o CHART, ADJUSTMENT

## ELECTRICAL PARTS

### RESISTOR, CHIP

#### Part No. SP Description

1-216-295-00	s	CHIP	0	5%	1/10W
1-216-298-00	s	CHIP	2.2	5%	1/10W
1-216-302-00	s	CHIP	2.7	5%	1/10W
1-216-304-00	s	CHIP	3.3	5%	1/10W
1-216-306-00	s	CHIP	3.9	5%	1/10W
1-216-308-00	s	CHIP	4.7	5%	1/10W
1-216-309-00	s	CHIP	5.6	5%	1/10W
1-216-311-00	s	CHIP	6.8	5%	1/10W
1-216-313-00	s	CHIP	8.2	5%	1/10W
1-216-001-00	s	CHIP	10	5%	1/10W
1-216-003-00	s	CHIP	12	5%	1/10W
1-216-005-00	s	CHIP	15	5%	1/10W
1-216-007-00	s	CHIP	18	5%	1/10W
1-216-009-00	s	CHIP	22	5%	1/10W
1-216-011-00	s	CHIP	27	5%	1/10W
1-216-013-00	s	CHIP	33	5%	1/10W
1-216-015-00	s	CHIP	39	5%	1/10W
1-216-017-00	s	CHIP	47	5%	1/10W
1-216-019-00	s	CHIP	56	5%	1/10W
1-216-021-00	s	CHIP	68	5%	1/10W
1-216-023-00	s	CHIP	82	5%	1/10W
1-216-025-00	s	CHIP	100	5%	1/10W
1-216-027-00	s	CHIP	120	5%	1/10W
1-216-029-00	s	CHIP	150	5%	1/10W
1-216-031-00	s	CHIP	180	5%	1/10W
1-216-033-00	s	CHIP	220	5%	1/10W
1-216-035-00	s	CHIP	270	5%	1/10W
1-216-037-00	s	CHIP	330	5%	1/10W
1-216-039-00	s	CHIP	390	5%	1/10W
1-216-041-00	s	CHIP	470	5%	1/10W
1-216-043-00	s	CHIP	560	5%	1/10W
1-216-045-00	s	CHIP	680	5%	1/10W
1-216-047-00	s	CHIP	820	5%	1/10W
1-216-049-00	s	CHIP	1k	5%	1/10W
1-216-051-00	s	CHIP	1.2k	5%	1/10W
1-216-053-00	s	CHIP	1.5k	5%	1/10W
1-216-055-00	s	CHIP	1.8k	5%	1/10W
1-216-057-00	s	CHIP	2.2k	5%	1/10W
1-216-059-00	s	CHIP	2.7k	5%	1/10W
1-216-061-00	s	CHIP	3.3k	5%	1/10W
1-216-063-00	s	CHIP	3.9k	5%	1/10W
1-216-065-00	s	CHIP	4.7k	5%	1/10W
1-216-067-00	s	CHIP	5.6k	5%	1/10W
1-216-069-00	s	CHIP	6.8k	5%	1/10W
1-216-071-00	s	CHIP	8.2k	5%	1/10W
1-216-073-00	s	CHIP	10k	5%	1/10W
1-216-075-00	s	CHIP	12k	5%	1/10W
1-216-077-00	s	CHIP	15k	5%	1/10W
1-216-079-00	s	CHIP	18k	5%	1/10W
1-216-081-00	s	CHIP	22k	5%	1/10W
1-216-083-00	s	CHIP	27k	5%	1/10W
1-216-085-00	s	CHIP	33k	5%	1/10W
1-216-087-00	s	CHIP	39k	5%	1/10W
1-216-089-00	s	CHIP	47k	5%	1/10W
1-216-091-00	s	CHIP	56k	5%	1/10W
1-216-093-00	s	CHIP	68k	5%	1/10W
1-216-095-00	s	CHIP	82k	5%	1/10W
1-216-097-00	s	CHIP	100k	5%	1/10W
1-216-099-00	s	CHIP	120k	5%	1/10W
1-216-101-00	s	CHIP	150k	5%	1/10W

### (RESISTOR, CHIP)

#### Part No. SP Description

1-216-103-00	s	CHIP	180k	5%	1/10W
1-216-105-00	s	CHIP	220k	5%	1/10W
1-216-107-00	s	CHIP	270k	5%	1/10W
1-216-109-00	s	CHIP	330k	5%	1/10W
1-216-111-00	s	CHIP	390k	5%	1/10W
1-216-113-00	s	CHIP	470k	5%	1/10W
1-216-115-00	s	CHIP	560k	5%	1/10W
1-216-117-00	s	CHIP	680k	5%	1/10W
1-216-119-00	s	CHIP	820k	5%	1/10W
1-216-121-00	s	CHIP	1.0M	5%	1/10W
1-216-123-00	s	CHIP	1.2M	5%	1/10W
1-216-125-00	s	CHIP	1.5M	5%	1/10W
1-216-127-00	s	CHIP	1.8M	5%	1/10W
1-216-129-00	s	CHIP	2.2M	5%	1/10W
1-216-131-00	s	CHIP	2.7M	5%	1/10W
1-216-133-00	s	CHIP	3.3M	5%	1/10W

### CAPACITOR, CHIP CERAMIC

#### Part No. SP Description

1-163-083-00	s	CHIP CERAMIC	1pF	+-0.25pF	50V
1-163-085-00	s	CHIP CERAMIC	2pF	+-0.25pF	50V
1-163-087-00	s	CHIP CERAMIC	4pF	+-0.25pF	50V
1-163-089-00	s	CHIP CERAMIC	6pF	+-0.5pF	50V
1-163-091-00	s	CHIP CERAMIC	8pF	+-0.5pF	50V
1-163-093-00	s	CHIP CERAMIC	10pF	5%	50V
1-163-097-00	s	CHIP CERAMIC	15pF	5%	50V
1-163-101-00	s	CHIP CERAMIC	22pF	5%	50V
1-163-105-00	s	CHIP CERAMIC	33pF	5%	50V
1-163-109-00	s	CHIP CERAMIC	47pF	5%	50V
1-163-113-00	s	CHIP CERAMIC	68pF	5%	50V
1-163-117-00	s	CHIP CERAMIC	100pF	5%	50V
1-163-121-00	s	CHIP CERAMIC	150pF	5%	50V
1-163-125-00	s	CHIP CERAMIC	220pF	5%	50V
1-163-129-00	s	CHIP CERAMIC	330pF	5%	50V
1-163-133-00	s	CHIP CERAMIC	470pF	5%	50V
1-163-137-00	s	CHIP CERAMIC	680pF	5%	50V
1-163-141-00	s	CHIP CERAMIC	1000pF	5%	50V
1-163-145-00	s	CHIP CERAMIC	1500pF	10%	50V
1-163-013-00	s	CHIP CERAMIC	2200pF	10%	50V
1-163-015-00	s	CHIP CERAMIC	3300pF	10%	50V
1-163-017-00	s	CHIP CERAMIC	4700pF	10%	50V
1-163-019-00	s	CHIP CERAMIC	6800pF	10%	50V
1-163-021-00	s	CHIP CERAMIC	0.01	10%	50V
1-163-023-00	s	CHIP CERAMIC	0.015	10%	50V
1-163-034-00	s	CHIP CERAMIC	0.033	50V	
1-163-035-00	s	CHIP CERAMIC	0.047	50V	
1-163-036-00	s	CHIP CERAMIC	0.068	50V	
1-163-038-00	s	CHIP CERAMIC	0.1	50V	

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RESISTOR, CHIP METAL  
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Part No. SP Description

1-216-603-11 s CHIP METAL 10 1% 1/10W  
1-216-605-11 s CHIP METAL 12 1% 1/10W  
1-216-609-11 s CHIP METAL 18 1% 1/10W  
1-216-611-11 s CHIP METAL 22 1% 1/10W  
1-216-614-11 s CHIP METAL 30 1% 1/10W

1-216-617-11 s CHIP METAL 39 1% 1/10W  
1-216-619-11 s CHIP METAL 47 1% 1/10W  
1-216-620-11 s CHIP METAL 51 1% 1/10W  
1-216-623-11 s CHIP METAL 68 1% 1/10W  
1-216-624-11 s CHIP METAL 75 1% 1/10W

1-216-625-11 s CHIP METAL 82 1% 1/10W  
1-216-626-11 s CHIP METAL 91 1% 1/10W  
1-216-627-11 s CHIP METAL 100 1% 1/10W  
1-216-629-11 s CHIP METAL 120 1% 1/10W  
1-216-631-11 s CHIP METAL 150 1% 1/10W

1-216-633-11 s CHIP METAL 180 1% 1/10W  
1-216-634-11 s CHIP METAL 200 1% 1/10W  
1-216-635-11 s CHIP METAL 220 1% 1/10W  
1-216-636-11 s CHIP METAL 240 1% 1/10W  
1-216-637-11 s CHIP METAL 270 1% 1/10W

1-216-638-11 s CHIP METAL 300 1% 1/10W  
1-216-639-11 s CHIP METAL 330 1% 1/10W  
1-216-640-11 s CHIP METAL 360 1% 1/10W  
1-216-641-11 s CHIP METAL 390 1% 1/10W  
1-216-642-11 s CHIP METAL 430 1% 1/10W

1-216-643-11 s CHIP METAL 470 1% 1/10W  
1-216-644-11 s CHIP METAL 510 1% 1/10W  
1-216-645-11 s CHIP METAL 560 1% 1/10W  
1-216-647-11 s CHIP METAL 680 1% 1/10W  
1-216-648-11 s CHIP METAL 750 1% 1/10W

1-216-649-11 s CHIP METAL 820 1% 1/10W  
1-216-650-11 s CHIP METAL 910 1% 1/10W  
1-216-651-11 s CHIP METAL 1.0k 1% 1/10W  
1-216-652-11 s CHIP METAL 1.1k 1% 1/10W  
1-216-653-11 s CHIP METAL 1.2k 1% 1/10W

1-216-655-11 s CHIP METAL 1.5k 1% 1/10W  
1-216-656-11 s CHIP METAL 1.6k 1% 1/10W  
1-216-657-11 s CHIP METAL 1.8k 1% 1/10W  
1-216-658-11 s CHIP METAL 2k 1% 1/10W  
1-216-659-11 s CHIP METAL 2.2k 1% 1/10W

1-216-660-11 s CHIP METAL 2.4k 1% 1/10W  
1-216-661-11 s CHIP METAL 2.7k 1% 1/10W  
1-216-662-11 s CHIP METAL 3k 1% 1/10W  
1-216-663-11 s CHIP METAL 3.3k 1% 1/10W  
1-216-664-11 s CHIP METAL 3.5k 1% 1/10W

1-216-665-11 s CHIP METAL 3.9k 1% 1/10W  
1-216-666-11 s CHIP METAL 4.3k 1% 1/10W  
1-216-667-11 s CHIP METAL 4.7k 1% 1/10W  
1-216-668-11 s CHIP METAL 5.1k 1% 1/10W  
1-216-669-11 s CHIP METAL 5.6k 1% 1/10W

1-216-670-11 s CHIP METAL 6.2k 1% 1/10W  
1-216-671-11 s CHIP METAL 6.8k 1% 1/10W  
1-216-672-11 s CHIP METAL 7.5k 1% 1/10W  
1-216-673-11 s CHIP METAL 8.2k 1% 1/10W  
1-216-674-11 s CHIP METAL 9.1k 1% 1/10W

1-216-675-11 s CHIP METAL 10k 1% 1/10W  
1-216-676-11 s CHIP METAL 11k 1% 1/10W  
1-216-677-11 s CHIP METAL 12k 1% 1/10W  
1-216-678-11 s CHIP METAL 13k 1% 1/10W  
1-216-679-11 s CHIP METAL 15k 1% 1/10W

(RESISTOR, CHIP METAL)

Part No. SP Description

1-216-680-11 s CHIP METAL 16k 1% 1/10W  
1-216-681-11 s CHIP METAL 18k 1% 1/10W  
1-216-682-11 s CHIP METAL 20k 1% 1/10W  
1-216-683-11 s CHIP METAL 22k 1% 1/10W  
1-216-684-11 s CHIP METAL 24k 1% 1/10W

1-216-685-11 s CHIP METAL 27k 1% 1/10W  
1-216-686-11 s CHIP METAL 30k 1% 1/10W  
1-216-687-11 s CHIP METAL 33k 1% 1/10W  
1-216-688-11 s CHIP METAL 36k 1% 1/10W  
1-216-689-11 s CHIP METAL 39k 1% 1/10W

1-216-690-11 s CHIP METAL 43k 1% 1/10W  
1-216-691-11 s CHIP METAL 49k 1% 1/10W  
1-216-692-11 s CHIP METAL 51k 1% 1/10W  
1-216-693-11 s CHIP METAL 56k 1% 1/10W  
1-216-694-11 s CHIP METAL 62k 1% 1/10W

1-216-695-11 s CHIP METAL 68k 1% 1/10W  
1-216-696-11 s CHIP METAL 75k 1% 1/10W  
1-216-697-11 s CHIP METAL 82k 1% 1/10W  
1-216-698-11 s CHIP METAL 91k 1% 1/10W  
1-216-699-11 s CHIP METAL 100k 1% 1/10W

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AT-63 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-211-A	o MOUNTED CIRCUIT BOARD "AT-63"
1pc	7-621-772-18	s SCREW +B 2X4
C1	1-124-234-00	s ELECT 22uF 20% 16V
C2	1-126-154-11	s ELECT 47uF 20% 6.3V
C3	1-126-154-11	s ELECT 47uF 20% 6.3V
C4	1-124-229-00	s ELECT 33uF 20% 10V
C5	1-124-229-00	s ELECT 33uF 20% 10V
C6	1-124-229-00	s ELECT 33uF 20% 10V
C8	1-126-157-11	s ELECT 10uF 20% 16V
C9	1-163-251-11	s CERAMIC 100PF 5% 50V
C10	1-131-347-00	s TANTALUM 1uF 10% 35V
C11	1-131-347-00	s TANTALUM 1uF 10% 35V
C13	1-124-234-00	s ELECT 22uF 20% 16V
C14	1-126-153-11	s ELECT 22uF 20% 6.3V
C16	1-124-589-11	s ELECT 47uF 20% 10V
C18	1-124-584-00	s ELECT 100uF 20% 10V
C20	1-124-234-00	s ELECT 22uF 20% 16V
C21	1-126-153-11	s ELECT 22uF 20% 6.3V
C22	1-126-153-11	s ELECT 22uF 20% 6.3V
C23	1-126-153-11	s ELECT 22uF 20% 6.3V
C24	1-124-234-00	s ELECT 22uF 20% 16V
C25	1-126-153-11	s ELECT 22uF 20% 6.3V
C26	1-126-163-11	s ELECT 4.7uF 20% 50V
C27	1-126-163-11	s ELECT 4.7uF 20% 50V
C28	1-126-163-11	s ELECT 4.7uF 20% 50V
C29	1-126-163-11	s ELECT 4.7uF 20% 50V
C34	1-124-234-00	s ELECT 22uF 20% 16V
C35	1-126-160-11	s ELECT 1uF 20% 50V
C36	1-126-160-11	s ELECT 1uF 20% 50V
C37	1-130-489-00	s MYLAR 0.033uF 5% 50V
C38	1-164-161-11	s CERAMIC CHIP 0.0022uF 10% 50V
C39	1-126-160-11	s ELECT 1uF 20% 50V
C41	1-126-153-11	s ELECT 22uF 20% 6.3V
C43	1-126-153-11	s ELECT 22uF 20% 6.3V
C45	1-163-245-11	s CERAMIC 56PF 5% 50V
C46	1-131-379-00	s TANTALUM 22uF 10% 10V
C47	1-131-379-00	s TANTALUM 22uF 10% 10V
C50	1-126-157-11	s ELECT 10uF 20% 16V
C53	1-126-157-11	s ELECT 10uF 20% 16V
C62	1-124-234-00	s ELECT 22uF 20% 16V
C63	1-126-153-11	s ELECT 22uF 20% 6.3V
C67	1-126-157-11	s ELECT 10uF 20% 16V
C68	1-126-157-11	s ELECT 10uF 20% 16V
C69	1-126-157-11	s ELECT 10uF 20% 16V
C70	1-126-153-11	s ELECT 22uF 20% 6.3V
C79	1-131-365-00	s TANTALUM 10uF 10% 16V
C80	1-126-160-11	s ELECT 1uF 20% 50V
C81	1-126-157-11	s ELECT 10uF 20% 16V
C82	1-124-589-11	s ELECT 47uF 20% 10V
CN1	1-566-516-11	s RECEPTACLE, FPC (ZIF) 16P
CN2	1-565-210-11	s RECEPTACLE, FPC (ZIF) 30P
CN3	1-506-467-11	o CONNECTOR, 2P, MALE
CN4	1-506-468-11	o CONNECTOR, 3P, MALE
CV1	1-141-245-00	s TRIMMER 30PF
D2	8-719-800-76	s DIODE 1SS226
D3	8-719-104-31	s DIODE 1S2838
D5	8-719-104-31	s DIODE 1S2838

(AT-63 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D9	8-719-104-31	s DIODE 1S2838
D10	8-719-104-31	s DIODE 1S2838
D11	8-719-104-31	s DIODE 1S2838
D12	8-719-104-31	s DIODE 1S2838
D13	8-719-105-90	s DIODE RD5.6M-B1
D14	8-719-104-31	s DIODE 1S2838
D21	8-719-800-76	s DIODE 1SS226
D23	8-719-104-31	s DIODE 1S2838
D24	8-719-800-76	s DIODE 1SS226
D25	8-719-104-34	s DIODE 1S2836
D26	8-719-104-34	s DIODE 1S2836
D27	8-719-104-34	s DIODE 1S2836
D28	8-719-104-34	s DIODE 1S2836
IC1	8-759-300-71	s IC MC14053BF
IC2	8-759-101-12	s IC UPC311G2
IC3	8-759-981-65	s IC LM2903M
IC4	8-759-906-54	s IC TL064CNS
IC5	8-759-300-71	s IC MC14053BF
IC7	8-759-906-54	s IC TL064CNS
IC8	8-759-009-10	s IC MC14069UBF
IC9	8-759-323-26	s IC HD6305YOE17F
IC10	8-759-977-80	s IC MB88342PF
IC11	8-759-977-80	s IC MB88342PF
IC12	8-759-009-05	s IC MC14051BF
IC13	8-759-008-74	s IC MC14001BF
IC14	8-759-906-54	s IC TL064CNS
IC15	8-759-906-54	s IC TL064CNS
IC16	8-759-112-72	s IC UPD6142G-101
IC17	8-759-906-54	s IC TL064CNS
IC18	8-759-300-71	s IC MC14053BF
IC19	8-759-633-29	s IC M6M80011L
IC20	8-759-009-10	s IC MC14069UBF
IC21	8-759-908-17	s IC TL082CPS
L4	1-408-783-00	s CHIP 33uH
L5	1-408-786-21	s CHIP 56uH
L6	1-408-783-00	s CHIP 33uH
Q1	8-729-216-22	s TRANSISTOR 2SA1162
Q2	8-729-216-22	s TRANSISTOR 2SA1162
Q3	8-729-216-22	s TRANSISTOR 2SA1162
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-402-19	s TRANSISTOR XN6501
Q6	8-729-402-19	s TRANSISTOR XN6501
Q7	8-729-100-66	s TRANSISTOR 2SC1623
Q8	8-729-402-84	s TRANSISTOR XN4601
Q9	8-729-402-84	s TRANSISTOR XN4601
Q10	8-729-109-41	s TRANSISTOR 2SK94-X1
Q11	8-729-100-66	s TRANSISTOR 2SC1623
Q12	8-729-402-19	s TRANSISTOR XN6501
Q13	8-729-403-32	s TRANSISTOR XN6534
Q14	8-729-402-84	s TRANSISTOR XN4601
Q20	8-729-402-19	s TRANSISTOR XN6501
Q21	8-729-402-19	s TRANSISTOR XN6501
Q23	8-729-100-66	s TRANSISTOR 2SC1623
R146	1-216-748-11	s METAL CHIP 39K 5% 1/10W
RB1	1-231-387-00	s NETTY, RES
RV1	1-237-603-11	s RES, ADJ, METAL 2.2K

(AT-63 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RV2	1-237-606-11	s RES, ADJ, METAL 22K
RV3	1-237-603-11	s RES, ADJ, METAL 2.2K
RV4	1-237-518-21	s RES, ADJ, METAL 10K
RV5	1-237-518-21	s RES, ADJ, METAL 10K
RV6	1-230-528-11	s METAL 220K
S1	1-570-865-11	s SWITCH, SLIDE
S2	1-553-977-00	s SWITCH, SLIDE
S3	1-554-303-21	s KEY BOARD "REC REVIEW"
S4	1-570-865-11	s SWITCH, SLIDE
S5	1-570-865-11	s SWITCH, SLIDE
S7	1-570-854-11	s SWITCH, SLIDE
S8	1-570-865-11	s SWITCH, SLIDE
S9	1-554-364-00	s SLIDE "DISP CHG"
S10	1-570-865-11	s SWITCH, SLIDE
X1	1-567-192-11	s CERAMIC 4.00MHz

BC-22 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-221-A	o MOUNTED CIRCUIT BOARD "BC-22"
3pcs	1-569-193-11	o CONTACT
C1	1-124-120-11	s ELECT 220uF 20% 25V
C2	1-126-176-11	s ELECT 220uF 20% 10V
C3	1-124-120-11	s ELECT 220uF 20% 25V
C4	1-131-379-00	s TANTALUM 22uF 10% 10V
CN1	1-566-257-31	o RECEPTACLE, BOARD TO BOARD 11P
CN2	1-566-257-31	o RECEPTACLE, BOARD TO BOARD 11P
CN5	1-562-156-11	o HOUSING, 11P
CN6	1-562-152-11	o HOUSING, 7P
CN21	1-569-196-11	o HOUSING, 3P
IC1	8-759-233-18	s IC TC74HC374AF
L1	1-408-413-00	s MICRO 22uH

BKG-4 BOARD

Ref. No. or Q'ty	Part No.	SP Description
CN1	1-565-242-11	o HEADER, PIN 9P
D1	8-719-104-34	s DIODE 1S2836
D2	8-719-104-34	s DIODE 1S2836
DL1	1-415-370-11	s 340nS
IC1	8-759-907-81	s IC SN74LS221NS
IC2	8-759-012-84	s IC MC14557BF
IC3	8-759-201-53	s IC TC40H000F

CM-22 BOARD

Ref. No. or Q'ty	Part No.	SP Description
C1	1-163-251-11	s CERAMIC 100PF 5% 50V
C2	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C4	1-163-251-11	s CERAMIC 100PF 5% 50V
C5	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C6	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C7	1-163-251-11	s CERAMIC 100PF 5% 50V
C8	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C9	1-163-251-11	s CERAMIC 100PF 5% 50V
C11	1-163-251-11	s CERAMIC 100PF 5% 50V
CN1	1-566-095-11	s PIN, BOARD TO BOARD 10P
IC1	8-759-906-59	s IC CX22017
Q1	8-729-100-66	s TRANSISTOR 2SC1623
Q2	8-729-100-66	s TRANSISTOR 2SC1623
Q3	8-729-100-66	s TRANSISTOR 2SC1623
RV1	1-228-394-00	s RES, ADJ, METAL 4.7K
RV2	1-228-394-00	s RES, ADJ, METAL 4.7K

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CN-432 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-210-A	o MOUNTED CIRCUIT BOARD "CN-432"
C4	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C5	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C6	1-135-125-21	s TANTALUM CHIP 33uF 20% 10V
C13	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C14	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C15	1-135-125-21	s TANTALUM CHIP 33uF 20% 10V
CN1	1-563-691-21	o CONNECTOR, BOARD TO BOARD 18P
CN2	1-563-687-21	o RECEPTACLE, BOARD TO BOARD 14P
CN3	1-565-160-11	o PIN, CONNECTOR (ANGLE) 13P
CN4	1-565-150-11	o PIN, CONNECTOR (ANGLE) 3P
CN5	1-565-160-11	o PIN, CONNECTOR (ANGLE) 13P
CN6	1-565-151-11	o CONNECTOR, 4P, MALE
CN7	1-565-160-11	o PIN, CONNECTOR (ANGLE) 13P
CN8	1-565-150-11	o PIN, CONNECTOR (ANGLE) 3P
D1	8-719-104-31	s DIODE 1S2838
D2	8-719-104-31	s DIODE 1S2838
D3	8-719-104-31	s DIODE 1S2838
D5	8-719-104-31	s DIODE 1S2838
D6	8-719-104-31	s DIODE 1S2838
D7	8-719-104-31	s DIODE 1S2838
IC1	8-759-243-06	s IC TC74AC04F
IC2	8-759-243-06	s IC TC74AC04F
Q1	8-729-216-22	s TRANSISTOR 2SA1162
Q2	8-729-100-66	s TRANSISTOR 2SC1623
Q3	8-729-141-64	s TRANSISTOR 2SC3735-B35
Q4	8-729-112-65	s TRANSISTOR 2SA1462
R9	1-216-748-11	s METAL CHIP 39K 5% 1/10W

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DR-107 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	3-621-124-00	o SPACER
C1	1-135-138-11	s TANTAL, 10uF 20% 25V
C2	1-135-076-21	s TANTALUM CHIP 1uF 10% 35V
C3	1-135-076-21	s TANTALUM CHIP 1uF 10% 35V
C4	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C5	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C6	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C7	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C9	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C11	1-163-235-11	s CERAMIC 22PF 5% 50V
C13	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C14	1-135-213-21	s TANTAL, 3.3uF 20% 25V
C15	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C16	1-135-216-11	s TANTAL, 10uF 20% 10V
C17	1-163-102-00	s CERAMIC CHIP 24PF 5% 50V
C20	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C21	1-135-213-21	s TANTAL, 3.3uF 20% 25V
C22	1-135-076-21	s TANTALUM CHIP 1uF 10% 35V
C23	1-135-165-11	s TANTALUM CHIP 33uF 10% 16V
CN1	1-566-257-31	o RECEPTACLE, BOARD TO BOARD 11P
CN2	1-566-280-21	o RECEPTACLE, BOARD TO BOARD 18P
CN3	1-566-276-21	o RECEPTACLE, BOARD TO BOARD 14P
CN4	1-566-258-11	o RECEPTACLE, BOARD TO BOARD 12P
D1	8-719-800-76	s DIODE 1SS226
D2	8-719-104-31	s DIODE 1S2838
D4	8-719-104-31	s DIODE 1S2838
D5	8-719-104-31	s DIODE 1S2838
IC1	8-759-925-80	s IC SN74HC14NS
IC2	8-759-925-76	s IC SN74HC08NS
IC3	8-759-100-95	s IC UPC324G2
IC4	8-752-327-46	s IC CXD1250M
IC5	8-752-327-46	s IC CXD1250M
IC6	8-752-327-46	s IC CXD1250M
L1	1-408-781-00	s CHIP 22uH
L2	1-408-765-21	s CHIP 1uH
L3	1-408-781-00	s CHIP 22uH
L4	1-408-781-00	s CHIP 22uH
Q1	8-729-144-56	s TRANSISTER 2SC3617
Q2	8-729-100-66	s TRANSISTOR 2SC1623
Q3	8-729-100-66	s TRANSISTOR 2SC1623
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-141-64	s TRANSISTOR 2SC3735-B35
Q6	8-729-112-65	s TRANSISTOR 2SA1462
Q7	8-729-112-65	s TRANSISTOR 2SA1462
Q8	8-729-141-64	s TRANSISTOR 2SC3735-B35
Q9	8-729-100-66	s TRANSISTOR 2SC1623
Q10	8-729-216-22	s TRANSISTOR 2SA1162
Q11	8-729-216-22	s TRANSISTOR 2SA1162
RV4	1-230-867-11	s RES, ADJ, METAL 1K
S1	1-572-328-31	s CHIP



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ES-2 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-214-A	o MOUNTED CIRCUIT BOARD "ES-2(N)"
C1	1-124-589-11	s ELECT 47uF 20% 10V
C2	1-126-154-11	s ELECT 47uF 20% 6.3V
C3	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C4	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C5	1-163-086-00	s CERAMIC CHIP 3PF 0.25PF 50V
C6	1-126-157-11	s ELECT 10uF 20% 16V
C8	1-126-392-11	s ELECT 100uF 20% 6.3V
C9	1-124-584-00	s ELECT 100uF 20% 10V
C10	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C13	1-135-161-21	s TANTALUM CHIP 22uF 10% 10V
C14	1-135-166-21	s TANTALUM CHIP 47uF 10% 10V
C15	1-163-251-11	s CERAMIC 100PF 5% 50V
C16	1-135-166-21	s TANTALUM CHIP 47uF 10% 10V
C17	1-135-085-21	s TANTALUM CHIP 4.7uF 20% 16V
C18	1-126-157-11	s ELECT 10uF 20% 16V
C19	1-163-224-11	s CERAMIC 7PF +/-0.25PF 50V
C20	1-135-161-21	s TANTALUM CHIP 22uF 10% 10V
C21	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C22	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C23	1-126-392-11	s ELECT 100uF 20% 6.3V
C24	1-135-166-21	s TANTALUM CHIP 47uF 10% 10V
C26	1-135-161-21	s TANTALUM CHIP 22uF 10% 10V
C28	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C29	1-163-235-11	s CERAMIC 22PF 5% 50V
C30	1-126-176-11	s ELECT 220uF 20% 10V
C34	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C35	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C36	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C37	1-126-392-11	s ELECT 100uF 20% 6.3V
C38	1-163-099-00	s CERAMIC CHIP 18PF 5% 50V
C39	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C40	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C43	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C44	1-126-176-11	s ELECT 220uF 20% 10V
C46	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C53	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C56	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C60	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C61	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C63	1-163-245-11	s CERAMIC 56PF 5% 50V
C64	1-163-245-11	s CERAMIC 56PF 5% 50V
C70	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C73	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C74	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C81	1-135-085-21	s TANTALUM CHIP 4.7uF 20% 16V
C203	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
CN1	1-565-780-11	o RECEPTACLE, TX(P.L) (PC BOARD) 50P
D1	8-719-104-34	s DIODE 1S2836
D2	8-719-104-34	s DIODE 1S2836
FL1	1-235-161-00	s BAND PASS 3.58MHz
IC1	8-759-710-24	s IC NJM319M
IC2	8-759-300-71	s IC MC14053BF
IC3	8-759-204-57	s IC TC40H076AF
IC4	8-759-009-10	s IC MC14069UBF
IC5	1-807-836-11	s HYBRID-IC (SYNC SEP)

(ES-2 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC6	1-808-513-12	s IC IB-38
IC7	8-759-907-81	s IC SN74LS221NS
IC8	8-741-134-00	s IC BX1340
IC9	1-808-514-11	s IC IB-37
IC10	8-752-332-67	s IC CXD1217M
IC11	8-759-209-90	s IC TC4S71F
IC12	8-759-209-15	s IC TC4SU69F
IC13	8-759-231-32	s IC TC7S00F
L1	1-408-781-00	s CHIP 22uH
L2	1-408-777-00	s CHIP 10uH
L3	1-408-781-00	s CHIP 22uH
L4	1-408-781-00	s CHIP 22uH
L6	1-408-781-00	s CHIP 22uH
L7	1-408-781-00	s CHIP 22uH
L8	1-408-781-00	s CHIP 22uH
L9	1-408-785-21	s CHIP 47uH
L10	1-408-781-00	s CHIP 22uH
L11	1-408-777-00	s CHIP 10uH
L12	1-408-785-21	s CHIP 47uH
L13	1-408-783-00	s CHIP 33uH
L14	1-408-785-21	s CHIP 47uH
L15	1-408-785-21	s CHIP 47uH
L16	1-408-785-21	s CHIP 47uH
L17	1-408-785-21	s CHIP 47uH
L18	1-408-784-11	s CHIP 39uH
L19	1-408-785-21	s CHIP 47uH
L20	1-408-785-21	s CHIP 47uH
L101	1-408-777-00	s CHIP 10uH
L201	1-408-785-21	s CHIP 47uH
LV1	1-408-844-00	s 22uH
Q1	8-729-402-84	s TRANSISTOR XN4601
Q2	8-729-402-19	s TRANSISTOR XN6501
Q3	8-729-122-63	s TRANSISTOR 2SA1226
Q4	8-729-402-19	s TRANSISTOR XN6501
Q5	8-729-402-78	s TRANSISTOR XN6401
Q6	8-729-100-66	s TRANSISTOR 2SC1623
Q7	8-729-175-73	s TRANSISTOR 2SC2757
Q8	8-729-216-22	s TRANSISTOR 2SA1162
Q9	8-729-402-19	s TRANSISTOR XN6501
Q11	8-729-100-66	s TRANSISTOR 2SC1623
Q12	8-729-402-19	s TRANSISTOR XN6501
Q13	8-729-402-19	s TRANSISTOR XN6501
Q14	8-729-216-22	s TRANSISTOR 2SA1162
Q15	8-729-100-66	s TRANSISTOR 2SC1623
Q20	8-729-109-41	s TRANSISTOR 2SK94-X1
RV1	1-230-523-11	s RES, ADJ, METAL 10K
RV2	1-230-519-11	s RES, ADJ, METAL 470
RV3	1-230-521-11	s RES, ADJ, METAL 2.2K
RV4	1-230-519-11	s RES, ADJ, METAL 470
RV5	1-230-524-11	s RES, ADJ, METAL 22K
RV6	1-230-522-11	s RES, ADJ, METAL 4.7K
RV7	1-230-521-11	s RES, ADJ, METAL 2.2K
RV8	1-230-524-11	s RES, ADJ, METAL 22K

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IE-29 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-229-A	o MOUNTED CIRCUIT BOARD "IE-29(N)"
C1	1-124-584-00	s ELECT 100nF 20% 10V
C5	1-163-227-11	s CERAMIC 10PF 5% 50V
C7	1-131-377-00	s TANTALUM 10uF 10% 10V
C12	1-131-365-00	s TANTALUM 10uF 10% 16V
C18	1-163-100-00	s CERAMIC CHIP 20PF 5% 50V
C19	1-163-241-11	s CERAMIC CHIP 39PF 5% 50V
C20	1-164-182-11	s CERAMIC 0.0033uF 10% 50V
C21	1-124-584-00	s ELECT 100nF 20% 10V
C23	1-124-589-11	s ELECT 47uF 20% 10V
C24	1-124-589-11	s ELECT 47uF 20% 10V
C26	1-126-096-11	s ELECT 10uF 20% 35V
C28	1-131-347-00	s TANTALUM 1uF 10% 35V
C29	1-131-365-00	s TANTALUM 10uF 10% 16V
C33	1-163-227-11	s CERAMIC 10PF 5% 50V
C34	1-163-103-00	s CERAMIC CHIP 27PF 5% 50V
C36	1-126-163-11	s ELECT 4.7uF 20% 50V
C37	1-124-234-00	s ELECT 22uF 20% 16V
C38	1-131-347-00	s TANTALUM 1uF 10% 35V
C39	1-131-347-00	s TANTALUM 1uF 10% 35V
C42	1-126-096-11	s ELECT 10uF 20% 35V
C44	1-124-589-11	s ELECT 47uF 20% 10V
C45	1-126-096-11	s ELECT 10uF 20% 35V
C47	1-126-096-11	s ELECT 10uF 20% 35V
C49	1-163-092-00	s CERAMIC CHIP 9PF 0.25PF 50V
C50	1-163-241-11	s CERAMIC CHIP 39PF 5% 50V
C51	1-163-115-00	s CERAMIC CHIP 82PF 5% 50V
C52	1-126-096-11	s ELECT 10uF 20% 35V
C53	1-126-096-11	s ELECT 10uF 20% 35V
C55	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C57	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C60	1-126-096-11	s ELECT 10uF 20% 35V
C70	1-126-096-11	s ELECT 10uF 20% 35V
C71	1-126-096-11	s ELECT 10uF 20% 35V
C72	1-131-377-00	s TANTALUM 10uF 10% 10V
C74	1-126-096-11	s ELECT 10uF 20% 35V
C75	1-131-347-00	s TANTALUM 1uF 10% 35V
C77	1-131-344-00	s TANTALUM 0.33uF 10% 35V
C78	1-131-365-00	s TANTALUM 10uF 10% 16V
C80	1-131-377-00	s TANTALUM 10uF 10% 10V
C82	1-126-163-11	s ELECT 4.7uF 20% 50V
C85	1-126-096-11	s ELECT 10uF 20% 35V
C86	1-126-096-11	s ELECT 10uF 20% 35V
C87	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C88	1-163-235-11	s CERAMIC 22PF 5% 50V
C91	1-126-096-11	s ELECT 10uF 20% 35V
C92	1-131-365-00	s TANTALUM 10uF 10% 16V
C93	1-131-365-00	s TANTALUM 10uF 10% 16V
C94	1-163-086-00	s CERAMIC CHIP 3PF 0.25PF 50V
C95	1-163-096-00	s CERAMIC CHIP 13PF 5% 50V
CN1	1-566-268-21	o RECEPTACLE, BOARD TO BOARD 6P
CN2	1-566-275-21	o RECEPTACLE, BOARD TO BOARD 13P
D1	8-719-800-76	s DIODE 1SS226
D4	8-719-101-97	s DIODE 1SS97-1
D5	8-719-101-97	s DIODE 1SS97-1
DL1	1-415-305-71	s DELAY LINE (1H)

(IE-29 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC1	8-759-981-51	s IC RC1496M
IC2	8-759-031-58	s IC SC7SU04F
IC3	8-759-300-71	s IC MC14053BF
IC4	8-759-300-71	s IC MC14053BF
IC5	8-759-702-02	s IC NJM062M
IC6	8-752-332-69	s IC CXL5504M
IC7	8-759-926-28	s IC SN74HC174NS
IC8	8-759-925-72	s IC SN74HC02NS
IC9	8-759-925-72	s IC SN74HC02NS
IC10	8-759-702-02	s IC NJM062M
L1	1-408-425-00	s 220uH
L2	1-408-413-00	s MICRO 22uH
L3	1-408-413-00	s MICRO 22uH
L4	1-408-413-00	s MICRO 22uH
L5	1-408-413-00	s MICRO 22uH
L7	1-410-471-11	s 12uH
L8	1-408-414-00	s 27uH
L9	1-408-416-00	s 39uH
L11	1-408-414-00	s 27uH
L12	1-408-418-00	s MICRO 56uH
L13	1-408-429-00	s INDUCTOR 470uH
L14	1-408-411-00	s 15uH
L15	1-408-411-00	s 15uH
L16	1-408-780-21	s CHIP 18uH
Q1	8-729-100-66	s TRANSISTOR 2SC1623
Q2	8-729-175-73	s TRANSISTOR 2SC2757
Q3	8-729-175-73	s TRANSISTOR 2SC2757
Q4	8-729-122-63	s TRANSISTOR 2SA1226
Q5	8-729-122-63	s TRANSISTOR 2SA1226
Q6	8-729-175-73	s TRANSISTOR 2SC2757
Q7	8-729-175-73	s TRANSISTOR 2SC2757
Q8	8-729-109-41	s TRANSISTOR 2SK94-X1
Q9	8-729-175-73	s TRANSISTOR 2SC2757
Q10	8-729-175-73	s TRANSISTOR 2SC2757
Q11	8-729-175-73	s TRANSISTOR 2SC2757
Q12	8-729-175-73	s TRANSISTOR 2SC2757
Q13	8-729-175-73	s TRANSISTOR 2SC2757
Q14	8-729-175-73	s TRANSISTOR 2SC2757
Q15	8-729-175-73	s TRANSISTOR 2SC2757
Q16	8-729-100-66	s TRANSISTOR 2SC1623
Q17	8-729-100-66	s TRANSISTOR 2SC1623
Q18	8-729-216-22	s TRANSISTOR 2SA1162
Q19	8-729-216-22	s TRANSISTOR 2SA1162
Q21	8-729-100-66	s TRANSISTOR 2SC1623
Q22	8-729-100-66	s TRANSISTOR 2SC1623
Q23	8-729-216-22	s TRANSISTOR 2SA1162
Q24	8-729-100-66	s TRANSISTOR 2SC1623
Q25	8-729-100-66	s TRANSISTOR 2SC1623
Q26	8-729-216-22	s TRANSISTOR 2SA1162
Q27	8-729-216-22	s TRANSISTOR 2SA1162
Q28	8-729-100-66	s TRANSISTOR 2SC1623
Q29	8-729-100-66	s TRANSISTOR 2SC1623
Q30	8-729-100-66	s TRANSISTOR 2SC1623
Q31	8-729-100-66	s TRANSISTOR 2SC1623
Q32	8-729-100-66	s TRANSISTOR 2SC1623
Q33	8-729-100-66	s TRANSISTOR 2SC1623
Q34	8-729-100-66	s TRANSISTOR 2SC1623
Q35	8-729-100-66	s TRANSISTOR 2SC1623
Q36	8-729-100-66	s TRANSISTOR 2SC1623

## (IE-29 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q37	8-729-100-66	s TRANSISTOR 2SC1623
Q38	8-729-109-41	s TRANSISTOR 2SK94-X1
Q39	8-729-100-66	s TRANSISTOR 2SC1623
Q40	8-729-216-22	s TRANSISTOR 2SA1162
Q41	8-729-175-73	s TRANSISTOR 2SC2757
Q42	8-729-175-73	s TRANSISTOR 2SC2757
Q43	8-729-100-66	s TRANSISTOR 2SC1623
Q44	8-729-216-22	s TRANSISTOR 2SA1162
Q45	8-729-216-22	s TRANSISTOR 2SA1162
Q46	8-729-100-66	s TRANSISTOR 2SC1623
Q48	8-729-100-66	s TRANSISTOR 2SC1623
Q49	8-729-100-66	s TRANSISTOR 2SC1623
Q50	8-729-216-22	s TRANSISTOR 2SA1162
Q51	8-729-100-66	s TRANSISTOR 2SC1623
Q52	8-729-100-66	s TRANSISTOR 2SC1623
Q53	8-729-216-22	s TRANSISTOR 2SA1162
Q54	8-729-216-22	s TRANSISTOR 2SA1162
Q55	8-729-216-22	s TRANSISTOR 2SA1162
Q56	8-729-100-66	s TRANSISTOR 2SC1623
Q57	8-729-175-73	s TRANSISTOR 2SC2757
R17	1-216-003-11	s METAL CHIP 12 5% 1/10W
R43	1-216-654-11	s METAL CHIP 1.3K 0.50% 1/10W
RV1	1-226-703-11	s RES, ADJ, METAL 10K
RV2	1-226-771-11	s RES, ADJ, METAL 1K
RV3	1-238-221-11	s RES, ADJ, METAL 2.2K
RV4	1-228-519-00	s RES, ADJ, METAL 2.2K
RV5	1-226-770-11	s RES, ADJ, METAL 470
RV6	1-237-603-11	s RES, ADJ, METAL 2.2K
S1	1-553-977-00	s SWITCH, SLIDE

## MB-325 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-212-A	o MOUNTED CIRCUIT BOARD "MB-325(N)"
C1	1-124-584-00	s ELECT 100uF 20% 10V
C3	1-124-148-00	s ELECT 100uF 20% 25V
C5	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C7	1-124-148-00	s ELECT 100uF 20% 25V
C8	1-124-148-00	s ELECT 100uF 20% 25V
C9	1-163-227-11	s CERAMIC 10PF 5% 50V
C18	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C19	1-135-216-11	s TANTAL, 10uF 20% 10V
C21	1-135-216-11	s TANTAL, 10uF 20% 10V
CN1	1-565-781-11	o RECEPTACLE, TX(S.S) (PC BOARD) 50P
CN2	1-565-781-11	o RECEPTACLE, TX(S.S) (PC BOARD) 50P
CN3	1-566-579-11	o CONNECTOR, MULTI 50P
CN4	1-566-516-11	s RECEPTACLE, FPC (ZIF) 16P
CN5	1-506-490-21	o CONNECTOR, 11P, MALE
CN6	1-506-471-11	o CONNECTOR, 6P, MALE
CN7	1-566-199-11	o PIN, CONNECTOR (PC BOARD) 6P
CN8	1-506-467-11	o CONNECTOR, 2P, MALE
CN9	1-506-487-11	o CONNECTOR, 8P, MALE
	1-569-202-31	o HOUSING, 9P
	1-569-191-11	o TERMINAL, SOLDERLESS
	1-569-193-11	o CONTACT
CN10	1-560-356-00	o CONNECTOR POST HEADER, 1LG (2P) MAL
	1-561-514-00	o HOUSING, 1LG 2P FEMALE
	1-560-372-00	o CONTACT, AWG22-28
CN11	1-506-468-11	o CONNECTOR, 3P, MALE
CN13	1-506-488-11	o CONNECTOR, 9P, MALE
CN14	1-506-481-11	o CONNECTOR, 2P, MALE
CN15	1-506-481-11	o CONNECTOR, 2P, MALE
CN16	1-506-481-11	o CONNECTOR, 2P, MALE
CN17	1-506-481-11	o CONNECTOR, 2P, MALE
	1-562-147-11	o HOUSING, 2P
	1-569-193-11	o CONTACT
CN19	1-506-472-11	o CONNECTOR, 7P, MALE
CN21	1-506-482-11	o CONNECTOR, 3P, MALE
CN22	1-565-210-11	s RECEPTACLE, FPC (ZIF) 30P
D1	8-719-815-85	s DIODE 1S1585
D2	8-719-815-85	s DIODE 1S1585
D3	8-719-105-90	s DIODE RD5.6M-B1
IC1	8-759-209-90	s IC TC4S71F
IC2	8-759-209-69	s IC TC4S11F
IC3	8-759-150-17	s IC CXD8154M
L1	1-408-096-00	s 470uH
L2	1-408-096-00	s 470uH
L4	1-408-767-21	s CHIP 1.5uH
PUI	1-466-426-11	s CONVERTER UNIT, DC-DC
Q1	8-729-100-66	s TRANSISTOR 2SC1623
Q2	8-729-100-66	s TRANSISTOR 2SC1623
Q3	8-729-100-66	s TRANSISTOR 2SC1623
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-216-22	s TRANSISTOR 2SA1162
Q6	8-729-109-41	s TRANSISTOR 2SK94-X1
Q7	8-729-100-66	s TRANSISTOR 2SC1623
Q8	8-729-140-75	s TRANSISTOR 2SD999-CLOCK
Q9	8-729-101-07	s TRANSISTOR 2SB798-DL

## (MB-325 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q10	8-729-216-22	s TRANSISTOR 2SA1162
Q11	8-729-100-66	s TRANSISTOR 2SC1623
Q12	8-729-216-22	s TRANSISTOR 2SA1162
Q13	8-729-100-66	s TRANSISTOR 2SC1623
Q14	8-729-216-22	s TRANSISTOR 2SA1162
R21	1-249-399-11	s CARBON 33 5% 1/4W
R22	1-249-399-11	s CARBON 33 5% 1/4W
R27	△ 1-216-369-00	s METAL 1 5% 2W
S1	1-553-977-00	s SWITCH, SLIDE
S2	1-553-977-00	s SWITCH, SLIDE

## MX-18 BOARD

Ref. No. or Q'ty	Part No.	SP Description
C1	1-163-224-11	s CERAMIC 7PF +-0.25PF 50V
C3	1-163-099-00	s CERAMIC CHIP 18PF 5% 50V
C4	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C11	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
CN1	1-566-095-11	s PIN, BOARD TO BOARD 10P
CN2	1-566-095-11	s PIN, BOARD TO BOARD 10P
L1	1-408-795-21	s CHIP 330uH
L2	1-408-795-21	s CHIP 330uH
Q1	8-729-403-29	s TRANSISTOR XN6435
Q2	8-729-402-16	s TRANSISTOR XN4608
Q3	8-729-402-19	s TRANSISTOR XN6501
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-402-78	s TRANSISTOR XN6401
Q6	8-729-402-19	s TRANSISTOR XN6501
Q7	8-729-100-66	s TRANSISTOR 2SC1623
Q8	8-729-216-22	s TRANSISTOR 2SA1162
Q9	8-729-402-78	s TRANSISTOR XN6401
R1	1-218-254-11	s METAL CHIP 2.55K 0.50% 1/10W
R2	1-218-257-11	s METAL CHIP 4.99K 0.50% 1/10W
R3	1-218-259-11	s METAL CHIP 13.7K 0.50% 1/10W
R12	1-218-255-11	s METAL CHIP 2.67K 0.50% 1/10W
R13	1-218-253-11	s METAL CHIP 2.32K 0.50% 1/10W
R28	1-218-256-11	s METAL CHIP 3.32K 0.50% 1/10W
R29	1-218-252-11	s METAL CHIP 2.26K 0.50% 1/10W
RV1	1-238-220-11	s RES, ADJ, METAL 1K
RV2	1-238-222-11	s RES, ADJ, METAL 4.7K
RV3	1-238-221-11	s RES, ADJ, METAL 2.2K
RV4	1-238-219-11	s RES, VAR, METAL 470

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PA-106 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-218-A	o MOUNTED CIRCUIT BOARD "PA-106"
2pcs	1-565-164-11	o CONTACT, FEMALE AWG26-28
2pcs	1-566-987-11	o CONTACT, AWG28-32
1pc	1-569-193-11	o CONTACT
C1	1-135-154-21	s TANTALUM CHIP 3.3uF 10% 20V
C2	1-135-152-21	s TANTAL, 1.5uF 20% 35V
C3	1-135-166-21	s TANTALUM CHIP 47uF 10% 10V
C4	1-135-177-21	s TANTALUM 1uF 10% 25V
C5	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C6	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C8	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C9	1-163-037-11	s CERAMIC CHIP 0.022uF 10% 25V
C19	1-135-211-11	s TANTAL, 6.8uF 20% 6.3V
C22	1-163-037-11	s CERAMIC CHIP 0.022uF 10% 25V
C27	1-135-091-00	s TANTALUM CHIP 1uF 20% 16V
C30	1-135-215-21	s TANTAL, 6.8uF 20% 16V
C31	1-124-584-00	s ELECT 100uF 20% 10V
CN1	1-565-794-11	o HOUSING, 13P
CN2	1-566-989-11	o HOUSING, 3P
CN7	1-565-132-11	o HOUSING, 13P
CN8	1-565-122-11	o HOUSING, 3P
CN14	1-562-147-11	o HOUSING, 2P
Q1	8-729-175-73	s TRANSISTOR 2SC2757
Q2	8-729-216-22	s TRANSISTOR 2SA1162
Q3	8-765-930-08	s TRANSISTOR 3SK163-2
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-216-22	s TRANSISTOR 2SA1162
Q6	8-765-930-08	s TRANSISTOR 3SK163-2
Q10	8-729-100-66	s TRANSISTOR 2SC1623
Q11	8-729-216-22	s TRANSISTOR 2SA1162
Q12	8-765-930-08	s TRANSISTOR 3SK163-2
Q13	8-729-100-66	s TRANSISTOR 2SC1623
Q17	8-729-100-66	s TRANSISTOR 2SC1623
Q18	8-729-100-66	s TRANSISTOR 2SC1623
Q19	8-729-100-66	s TRANSISTOR 2SC1623
Q20	8-729-100-66	s TRANSISTOR 2SC1623
Q21	8-729-216-22	s TRANSISTOR 2SA1162
Q22	8-729-100-66	s TRANSISTOR 2SC1623
Q24	8-729-100-66	s TRANSISTOR 2SC1623
R1Q	1-216-748-11	s METAL CHIP 39K 5% 1/10W

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PA-107B BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-220-A	o MOUNTED CIRCUIT BOARD "PA-107B"
2pcs	1-565-164-11	o CONTACT, FEMALE AWG26-28
2pcs	1-566-987-11	o CONTACT, AWG28-32
1pc	1-569-193-11	o CONTACT
C1	1-135-154-21	s TANTALUM CHIP 3.3uF 10% 20V
C2	1-135-152-21	s TANTAL, 1.5uF 20% 35V
C3	1-135-166-21	s TANTALUM CHIP 47uF 10% 10V
C4	1-135-177-21	s TANTALUM 1uF 10% 25V
C5	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C6	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C8	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C9	1-163-037-11	s CERAMIC CHIP 0.022uF 10% 25V
C19	1-135-211-11	s TANTAL, 6.8uF 20% 6.3V
C22	1-163-037-11	s CERAMIC CHIP 0.022uF 10% 25V
C27	1-135-091-00	s TANTALUM CHIP 1uF 20% 16V
C30	1-135-089-21	s TANTALUM CHIP 6.8uF 10% 20V
C31	1-124-584-00	s ELECT 100uF 20% 10V
CN1	1-565-794-11	o HOUSING, 13P
CN2	1-566-989-11	o HOUSING, 3P
CN7	1-565-132-11	o HOUSING, 13P
CN8	1-565-122-11	o HOUSING, 3P
CN16	1-562-147-11	o HOUSING, 2P
Q1	8-729-175-73	s TRANSISTOR 2SC2757
Q2	8-729-216-22	s TRANSISTOR 2SA1162
Q3	8-765-930-08	s TRANSISTOR 3SK163-2
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-216-22	s TRANSISTOR 2SA1162
Q9	8-765-930-08	s TRANSISTOR 3SK163-2
Q10	8-729-100-66	s TRANSISTOR 2SC1623
Q11	8-729-216-22	s TRANSISTOR 2SA1162
Q15	8-765-930-08	s TRANSISTOR 3SK163-2
Q16	8-729-100-66	s TRANSISTOR 2SC1623
Q17	8-729-100-66	s TRANSISTOR 2SC1623
Q18	8-729-100-66	s TRANSISTOR 2SC1623
Q19	8-729-100-66	s TRANSISTOR 2SC1623
Q20	8-729-100-66	s TRANSISTOR 2SC1623
Q21	8-729-216-22	s TRANSISTOR 2SA1162
Q22	8-729-100-66	s TRANSISTOR 2SC1623
Q24	8-729-100-66	s TRANSISTOR 2SC1623
R10	1-216-748-11	s METAL CHIP 39K 5% 1/10W
R33	1-216-628-11	s METAL CHIP 110 0.50% 1/10W

PA-107G BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-219-A	o MOUNTED CIRCUIT BOARD "PA-107G"
2pcs	1-565-164-11	o CONTACT, FEMALE AWG26-28
2pcs	1-566-987-11	o CONTACT, AWG28-32
1pc	1-569-193-11	o CONTACT
C1	1-135-154-21	s TANTALUM CHIP 3.3uF 10% 20V
C2	1-135-152-21	s TANTAL, 1.5uF 20% 35V
C3	1-135-166-21	s TANTALUM CHIP 47uF 10% 10V
C4	1-135-177-21	s TANTALUM 1uF 10% 25V
C5	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C6	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C8	1-135-164-21	s TANTALUM CHIP 22uF 10% 20V
C9	1-163-037-11	s CERAMIC CHIP 0.022uF 10% 25V
C19	1-135-211-11	s TANTAL 6.8uF 20% 6.3V
C22	1-163-037-11	s CERAMIC CHIP 0.022uF 10% 25V
C27	1-135-091-00	s TANTALUM CHIP 1uF 20% 16V
C30	1-135-089-21	s TANTALUM CHIP 6.8uF 10% 20V
C31	1-124-584-00	s ELECT 100uF 20% 10V
CN1	1-565-794-11	o HOUSING, 13P
CN2	1-566-990-11	o HOUSING, 4P
CN6	1-565-123-11	o HOUSING, 4P
CN7	1-565-132-11	o HOUSING, 13P
CN15	1-562-147-11	o HOUSING, 2P
Q1	8-729-175-73	s TRANSISTOR 2SC2757
Q2	8-729-216-22	s TRANSISTOR 2SA1162
Q3	8-765-930-08	s TRANSISTOR 3SK163-2
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-216-22	s TRANSISTOR 2SA1162
Q6	8-765-930-08	s TRANSISTOR 3SK163-2
Q7	8-729-100-66	s TRANSISTOR 2SC1623
Q8	8-729-216-22	s TRANSISTOR 2SA1162
Q9	8-765-930-08	s TRANSISTOR 3SK163-2
Q10	8-729-100-66	s TRANSISTOR 2SC1623
Q11	8-729-216-22	s TRANSISTOR 2SA1162
Q12	8-765-930-08	s TRANSISTOR 3SK163-2
Q13	8-729-100-66	s TRANSISTOR 2SC1623
Q14	8-729-216-22	s TRANSISTOR 2SA1162
Q15	8-765-930-08	s TRANSISTOR 3SK163-2
Q16	8-729-100-66	s TRANSISTOR 2SC1623
Q17	8-729-100-66	s TRANSISTOR 2SC1623
Q18	8-729-100-66	s TRANSISTOR 2SC1623
Q19	8-729-100-66	s TRANSISTOR 2SC1623
Q20	8-729-100-66	s TRANSISTOR 2SC1623
Q21	8-729-216-22	s TRANSISTOR 2SA1162
Q22	8-729-100-66	s TRANSISTOR 2SC1623
Q24	8-729-100-66	s TRANSISTOR 2SC1623
R10	1-216-748-11	s METAL CHIP 39K 5% 1/10W
R33	1-216-632-11	s METAL CHIP 160 0.50% 1/10W

PR-147 BOARD

Ref. No. or Q'ty	Part No.	SP Description
C2	1-135-091-00	s TANTALUM CHIP 1uF 20% 16V
C3	1-135-091-00	s TANTALUM CHIP 1uF 20% 16V
C4	1-135-091-00	s TANTALUM CHIP 1uF 20% 16V
C5	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C6	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C7	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C8	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C9	1-163-224-11	s CERAMIC 7PF +-0.25PF 50V
C11	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C12	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C14	1-163-235-11	s CERAMIC 22PF 5% 50V
C15	1-163-088-00	s CERAMIC CHIP 5PF 0.25PF 50V
C16	1-135-216-11	s TANTAL, 10uF 20% 10V
C17	1-135-216-11	s TANTAL, 10uF 20% 10V
C18	1-163-235-11	s CERAMIC 22PF 5% 50V
C19	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C20	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
CN1	1-566-095-11	s PIN, BOARD TO BOARD 10P
CN2	1-566-095-11	s PIN, BOARD TO BOARD 10P
D1	8-719-104-34	s DIODE 1S2836
D2	8-719-104-34	s DIODE 1S2836
D3	8-719-104-34	s DIODE 1S2836
IC1	8-759-906-53	s IC TL062CPS
Q1	8-729-175-73	s TRANSISTOR 2SC2757
Q2	8-729-100-66	s TRANSISTOR 2SC1623
Q3	8-729-175-73	s TRANSISTOR 2SC2757
Q4	8-729-175-73	s TRANSISTOR 2SC2757
Q5	8-729-175-73	s TRANSISTOR 2SC2757
Q6	8-729-109-41	s TRANSISTOR 2SK94-X1
Q7	8-729-122-63	s TRANSISTOR 2SA1226
Q8	8-729-100-66	s TRANSISTOR 2SC1623
Q9	8-729-402-78	s TRANSISTOR XN6401
Q10	8-729-403-29	s TRANSISTOR XN6435
Q11	8-729-403-32	s TRANSISTOR XN6534
RV1	1-238-219-11	s RES, VAR, METAL 470
RV2	1-238-222-11	s RES, ADJ, METAL 4.7K

## PR-148 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-223-A	o MOUNTED CIRCUIT BOARD "PR-148(N)"
C1	1-126-157-11	s ELECT 10uF 20% 16V
C7	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C9	1-163-227-11	s CERAMIC 10PF 5% 50V
C11	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C13	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C13	1-163-088-00	s CERAMIC CHIP 5PF 0.25PF 50V
C14	1-124-589-11	s ELECT 47uF 20% 10V
C17	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C24	1-124-472-11	s ELECT 470uF 20% 10V
C25	1-124-471-00	s ELECT 1000uF 20% 6.3V
C26	1-124-471-00	s ELECT 1000uF 20% 6.3V
C37	1-126-157-11	s ELECT 10uF 20% 16V
C38	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C39	1-124-589-11	s ELECT 47uF 20% 10V
C40	1-164-161-11	s CERAMIC CHIP 0.0022uF 10% 50V
C41	1-126-157-11	s ELECT 10uF 20% 16V
C42	1-126-157-11	s ELECT 10uF 20% 16V
C43	1-126-157-11	s ELECT 10uF 20% 16V
C44	1-124-472-11	s ELECT 470uF 20% 10V
C50	1-163-251-11	s CERAMIC 100PF 5% 50V
C51	1-164-161-11	s CERAMIC CHIP 0.0022uF 10% 50V
C53	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
CN1	1-563-679-21	o RECEPTACLE, BOARD TO BOARD 6P
CN2	1-563-686-21	o RECEPTACLE, BOARD TO BOARD 13P
CN3	1-565-780-11	o RECEPTACLE, TX(P.L)(PC BOARD)50P
D3	8-719-104-34	s DIODE 1S2836
D4	8-719-104-34	s DIODE 1S2836
D6	8-719-914-12	s DIODE HZ4BLL
D7	8-719-914-12	s DIODE HZ4BLL
D8	8-719-914-12	s DIODE HZ4BLL
D9	8-719-104-34	s DIODE 1S2836
D10	8-719-104-34	s DIODE 1S2836
DL1	1-415-307-00	s 165nS
DL2	1-415-307-00	s 165nS
DL3	1-415-307-00	s 165nS
IC1	8-759-204-40	s IC TC40H027F
IC2	8-759-201-50	s IC TC40H193F
IC3	8-759-906-54	s IC TL064CNS
IC4	8-759-201-53	s IC TC40H000F
IC5	8-759-209-97	s IC TC4S81F
IC6	8-759-209-97	s IC TC4S81F
IC7	8-759-209-97	s IC TC4S81F
IC8	8-759-300-71	s IC MC14053BF
IC9	8-759-209-97	s IC TC4S81F
IC10	8-759-209-69	s IC TC4S11F
IC11	8-759-209-97	s IC TC4S81F
IC12	8-759-209-54	s IC TC4S01F
IC13	8-759-209-15	s IC TC4SU69F
LP1	1-409-427-11	s FILTER, TRAP 14.3MHZ
Q1	8-729-216-22	s TRANSISTOR 2SA1162
Q2	8-729-109-41	s TRANSISTOR 2SK94-X1
Q3	8-729-100-66	s TRANSISTOR 2SC1623
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-100-66	s TRANSISTOR 2SC1623

## (PR-148 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q6	8-729-100-66	s TRANSISTOR 2SC1623
Q7	8-729-901-46	s TRANSISTOR DTA114YK
Q8	8-729-900-52	s TRANSISTOR DTC114YK
Q9	8-729-900-52	s TRANSISTOR DTC114YK
Q10	8-729-216-22	s TRANSISTOR 2SA1162
Q11	8-729-216-22	s TRANSISTOR 2SA1162
Q12	8-729-216-22	s TRANSISTOR 2SA1162
Q13	8-729-100-66	s TRANSISTOR 2SC1623
Q19	8-729-100-66	s TRANSISTOR 2SC1623
Q20	8-729-100-66	s TRANSISTOR 2SC1623
Q21	8-729-100-66	s TRANSISTOR 2SC1623
Q22	8-729-100-66	s TRANSISTOR 2SC1623
Q23	8-729-100-66	s TRANSISTOR 2SC1623
Q24	8-729-100-66	s TRANSISTOR 2SC1623
Q25	8-729-100-66	s TRANSISTOR 2SC1623
Q26	8-729-901-46	s TRANSISTOR DTA114YK
Q31	8-729-216-22	s TRANSISTOR 2SA1162
Q32	8-729-100-66	s TRANSISTOR 2SC1623
Q33	8-729-100-66	s TRANSISTOR 2SC1623
Q34	8-729-109-41	s TRANSISTOR 2SK94-X1
R125	1-216-748-11	s METAL CHIP 39K 5% 1/10W
RV1	1-226-703-11	s RES, ADJ, METAL 10K
RV2	1-226-771-11	s RES, ADJ, METAL 1K
RV3	1-226-771-11	s RES, ADJ, METAL 1K
RV4	1-226-771-11	s RES, ADJ, METAL 1K
RV5	1-226-771-11	s RES, ADJ, METAL 1K
RV6	1-238-222-11	s RES, ADJ, METAL 4.7K
RV7	1-238-222-11	s RES, ADJ, METAL 4.7K
RV8	1-238-222-11	s RES, ADJ, METAL 4.7K
RV9	1-226-702-00	s RES, ADJ, METAL 2.2K
RV10	1-226-702-00	s RES, ADJ, METAL 2.2K
RV11	1-226-702-00	s RES, ADJ, METAL 2.2K
RV12	1-238-225-11	s RES, ADJ, METAL 47K
RV13	1-238-225-11	s RES, ADJ, METAL 47K
RV14	1-238-225-11	s RES, ADJ, METAL 47K
RV15	1-238-225-11	s RES, ADJ, METAL 47K
RV16	1-238-225-11	s RES, ADJ, METAL 47K
RV17	1-238-225-11	s RES, ADJ, METAL 47K
RV18	1-238-225-11	s RES, ADJ, METAL 47K
RV19	1-238-225-11	s RES, ADJ, METAL 47K
RV20	1-238-225-11	s RES, ADJ, METAL 47K
RV21	1-238-225-11	s RES, ADJ, METAL 47K
RV22	1-238-225-11	s RES, ADJ, METAL 47K

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SW-445 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7520-515-A	o MOUNTED CIRCUIT BOARD "SW-445"
1pc	1-569-193-11	o CONTACT
CN3	1-569-195-11	s HOUSING, CONNECTOR 2P
CN8	1-569-195-11	s HOUSING, CONNECTOR 2P
S1	1-553-739-21	s SWITCH, PUSH
S2	1-553-739-21	s SWITCH, PUSH
S3	1-553-739-21	s SWITCH, PUSH
SW001	1-554-486-00	s SWITCH, TOGGLE

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SW-446 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7520-516-A	o MOUNTED CIRCUIT BOARD "SW-446"
1pc	1-562-736-11	o HOUSING, 3P
1pc	1-564-831-11	o CONTACT
1pc	1-569-193-11	o CONTACT
CN4	1-569-196-11	o HOUSING, 3P
S1	1-570-985-11	s SWITCH, TOGGLE
S2	1-570-985-11	s SWITCH, TOGGLE

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TG-72 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-216-A	o MOUNTED CIRCUIT BOARD "TG-72(N)"
C4	1-163-251-11	s CERAMIC 100PF 5% 50V
C6	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C7	1-135-125-21	s TANTALUM CHIP 33uF 20% 10V
C9	1-135-161-21	s TANTALUM CHIP 22uF 10% 10V
C19	1-135-125-21	s TANTALUM CHIP 33uF 20% 10V
CN1	1-563-684-31	o RECEPTACLE, BOARD TO BOARD 11P
CN2	1-563-685-31	o RECEPTACLE, BOARD TO BOARD 12P
CN3	1-563-684-31	o RECEPTACLE, BOARD TO BOARD 11P
CN4	1-563-684-31	o RECEPTACLE, BOARD TO BOARD 11P
CP1	1-577-181-11	s OSCILLATOR, CRYSTAL
IC1	8-752-333-20	s IC CXD1255Q
IC2	8-759-925-83	s IC SN74HC27NS
IC3	8-759-985-18	s IC 74AC08SJ
IC4	8-759-204-96	s IC TC74HC04F
IC5	8-759-925-76	s IC SN74HC08NS
IC6	8-759-031-43	s IC SC14S81F
L1	1-408-781-00	s CHIP 22uH
L2	1-408-781-00	s CHIP 22uH



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VA-105B BOARD  
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Ref. No.

or Q'ty Part No. SP Description

C1 1-163-235-11 s CERAMIC 22PF 5% 50V  
C2 1-163-088-00 s CERAMIC CHIP 5PF 0.25PF 50V  
C3 1-163-088-00 s CERAMIC CHIP 5PF 0.25PF 50V  
C7 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C8 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V

C9 1-135-216-11 s TANTAL,10uF 20% 10V  
C10 1-135-216-11 s TANTAL,10uF 20% 10V  
C11 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C12 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C13 1-163-088-00 s CERAMIC CHIP 5PF 0.25PF 50V

C14 1-135-159-21 s TANTALUM CHIP 10uF 20% 16V  
C15 1-135-072-21 s TANTALUM CHIP 0.22uF 20% 35V  
C18 1-135-149-21 s TANTALUM CHIP 2.2uF 10% 10V  
C19 1-163-251-11 s CERAMIC 100PF 5% 50V  
C20 1-135-072-21 s TANTALUM CHIP 0.22uF 20% 35V

C21 1-135-145-11 s TANTALUM CHIP 0.47uF 20% 25V  
C23 1-135-216-11 s TANTAL,10uF 20% 10V

CN1 1-566-095-11 s PIN, BOARD TO BOARD 10P  
CN2 1-566-095-11 s PIN, BOARD TO BOARD 10P

D4 8-719-104-34 s DIODE 1S2836  
D5 8-719-104-34 s DIODE 1S2836

IC1 8-759-981-51 s IC RC1496M  
IC2 8-759-906-53 s IC TL062CPS

Q1 8-729-109-41 s TRANSISTOR 2SK94-X1  
Q2 8-729-109-41 s TRANSISTOR 2SK94-X1  
Q3 8-729-100-66 s TRANSISTOR 2SC1623  
Q4 8-729-100-66 s TRANSISTOR 2SC1623  
Q5 8-729-122-63 s TRANSISTOR 2SA1226

Q6 8-729-100-66 s TRANSISTOR 2SC1623  
Q7 8-729-216-22 s TRANSISTOR 2SA1162  
Q8 8-729-402-19 s TRANSISTOR XN6501  
Q9 8-729-109-41 s TRANSISTOR 2SK94-X1  
Q11 8-729-109-41 s TRANSISTOR 2SK94-X1

Q14 8-729-122-63 s TRANSISTOR 2SA1226  
Q15 8-729-175-73 s TRANSISTOR 2SC2757  
Q17 8-729-216-22 s TRANSISTOR 2SA1162  
Q18 8-729-109-41 s TRANSISTOR 2SK94-X1

R18 1-216-654-11 s METAL CHIP 1.3K 0.50% 1/10W

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VA-105G BOARD  
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Ref. No.

or Q'ty Part No. SP Description

C1 1-163-235-11 s CERAMIC 22PF 5% 50V  
C7 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C8 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C9 1-135-216-11 s TANTAL,10uF 20% 10V  
C10 1-135-216-11 s TANTAL,10uF 20% 10V

C11 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C12 1-164-232-11 s CERAMIC CHIP 0.01uF 20% 100V  
C13 1-163-088-00 s CERAMIC CHIP 5PF 0.25PF 50V  
C14 1-135-159-21 s TANTALUM CHIP 10uF 20% 16V  
C15 1-135-072-21 s TANTALUM CHIP 0.22uF 20% 35V

C18 1-135-149-21 s TANTALUM CHIP 2.2uF 10% 10V  
C19 1-163-251-11 s CERAMIC 100PF 5% 50V  
C20 1-135-072-21 s TANTALUM CHIP 0.22uF 20% 35V  
C21 1-135-145-11 s TANTALUM CHIP 0.47uF 20% 25V  
C23 1-135-216-11 s TANTAL,10uF 20% 10V

C25 1-163-086-00 s CERAMIC CHIP 3PF 0.25PF 50V

CN1 1-566-095-11 s PIN, BOARD TO BOARD 10P  
CN2 1-566-095-11 s PIN, BOARD TO BOARD 10P

D4 8-719-104-34 s DIODE 1S2836  
D5 8-719-104-34 s DIODE 1S2836

IC1 8-759-981-51 s IC RC1496M  
IC2 8-759-906-53 s IC TL062CPS

Q1 8-729-109-41 s TRANSISTOR 2SK94-X1  
Q2 8-729-109-41 s TRANSISTOR 2SK94-X1  
Q3 8-729-100-66 s TRANSISTOR 2SC1623  
Q4 8-729-100-66 s TRANSISTOR 2SC1623  
Q5 8-729-122-63 s TRANSISTOR 2SA1226

Q6 8-729-100-66 s TRANSISTOR 2SC1623  
Q7 8-729-216-22 s TRANSISTOR 2SA1162  
Q8 8-729-402-19 s TRANSISTOR XN6501  
Q9 8-729-109-41 s TRANSISTOR 2SK94-X1  
Q11 8-729-109-41 s TRANSISTOR 2SK94-X1

Q14 8-729-122-63 s TRANSISTOR 2SA1226  
Q15 8-729-175-73 s TRANSISTOR 2SC2757  
Q17 8-729-216-22 s TRANSISTOR 2SA1162  
Q18 8-729-109-41 s TRANSISTOR 2SK94-X1

R18 1-216-654-11 s METAL CHIP 1.3K 0.50% 1/10W  
R43 1-216-127-11 s METAL, 1.8M 5% 1/10W

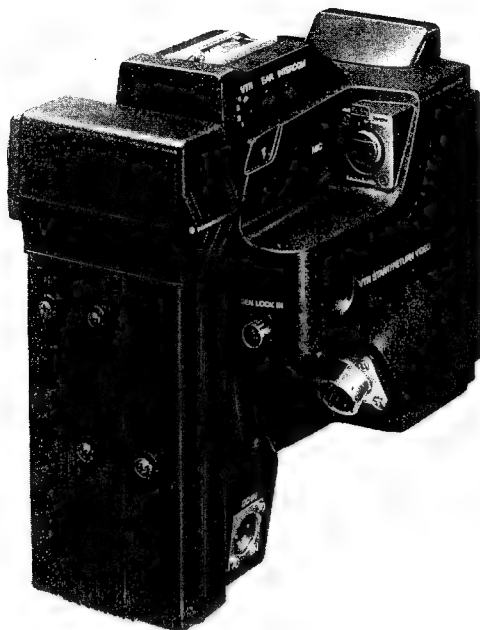
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VA-105R BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
C1	1-163-235-11	s CERAMIC 22PF 5% 50V
C7	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C8	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C9	1-135-216-11	s TANTAL, 10uF 20% 10V
C10	1-135-216-11	s TANTAL, 10uF 20% 10V
C11	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C12	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C13	1-163-088-00	s CERAMIC CHIP 5PF 0.25PF 50V
C14	1-135-159-21	s TANTALUM CHIP 10uF 20% 16V
C15	1-135-072-21	s TANTALUM CHIP 0.22uF 20% 35V
C18	1-135-149-21	s TANTALUM CHIP 2.2uF 10% 10V
C19	1-163-251-11	s CERAMIC 100PF 5% 50V
C20	1-135-072-21	s TANTALUM CHIP 0.22uF 20% 35V
C21	1-135-145-11	s TANTALUM CHIP 0.47uF 20% 25V
C23	1-135-216-11	s TANTAL, 10uF 20% 10V
C25	1-163-086-00	s CERAMIC CHIP 3PF 0.25PF 50V
CN1	1-566-095-11	s PIN, BOARD TO BOARD 10P
CN2	1-566-095-11	s PIN, BOARD TO BOARD 10P
D4	8-719-104-34	s DIODE 1S2836
D5	8-719-104-34	s DIODE 1S2836
IC1	8-759-981-51	s IC RC1496M
IC2	8-759-906-53	s IC TL062CPS
Q1	8-729-109-41	s TRANSISTOR 2SK94-X1
Q2	8-729-109-41	s TRANSISTOR 2SK94-X1
Q3	8-729-100-66	s TRANSISTOR 2SC1623
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-122-63	s TRANSISTOR 2SA1226
Q6	8-729-100-66	s TRANSISTOR 2SC1623
Q7	8-729-216-22	s TRANSISTOR 2SA1162
Q8	8-729-402-19	s TRANSISTOR XN6501
Q9	8-729-109-41	s TRANSISTOR 2SK94-X1
Q11	8-729-109-41	s TRANSISTOR 2SK94-X1
Q14	8-729-122-63	s TRANSISTOR 2SA1226
Q15	8-729-175-73	s TRANSISTOR 2SC2757
Q17	8-729-216-22	s TRANSISTOR 2SA1162
Q18	8-729-109-41	s TRANSISTOR 2SK94-X1
R18	1-216-654-11	s METAL CHIP 1.3K 0.50% 1/10W
R43	1-216-127-11	s METAL, 1.8M 5% 1/10W

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FRAME  
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Ref. No. or Q'ty	Part No.	SP Description
	1-542-112-11	s MICROPHONE (C-2025)
	1-547-463-11	o FILTER UNIT, OPTICAL
	1-574-145-11	s WIRE, FLAT TYPE (30 CORE)
	1-590-168-11	s WIRE, FLAT TYPE (16 CORE)
	1-942-381-12	s HARNESS (LENS)
	1-946-627-11	o HARNESS (RM)
	8-814-189-31	s MICROPHONE, BUILT-IN (C-1007A)
CN101	1-562-782-21	s RECEPTACLE, 10P, FEMALE "REMOTE"
	1-569-202-11	o HOUSING, 9P
	1-569-193-11	o CONTACT
	1-569-191-11	o TERMINAL, SOLDERLESS
CN102	1-561-320-00	s SOCKET, DIN 8P "VF"
CN104	1-562-222-41	s CONNECTOR, 6P, FEMALE
	1-562-151-11	o HOUSING, 6P
	1-569-193-11	o CONTACT
CN105	1-561-781-11	s CONNECTOR, BNC, FEMALE
S102	1-553-972-00	o TOGGLE "POWER"

## CAMERA ADAPTOR



### SPECIFICATIONS

Inputs/Outputs	VTR/CCU/CMA connector: Sony Q-type, 14-pin DC IN: XLR-type, 4-pin MIC IN: XLR-type, 3-pin GEN LOCK IN: BNC-type EAR: mini jack INTERCOM: mini intercom jack S VIDEO OUT: mini DIN-type, 4-pin AUDIO OUT: phono jack
Power requirements	12 V DC
Power consumption	0.8 W
Operating temperature	-5°C to +45°C (23°F to 113°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Weight	1.2 kg (2 lb 10 oz)
Dimensions	118 × 205 × 187 mm (4 <sup>3</sup> / <sub>4</sub> × 8 <sup>1</sup> / <sub>3</sub> × 7 <sup>3</sup> / <sub>8</sub> inches)
Supplied accessories	Screws for attaching the CA-327/327P M4 × 6 (2) M4 × 12 (2) Operating instructions (1)

Design and specifications are subject to change without notice.

**SONY**<sup>®</sup>  
**SERVICE MANUAL**

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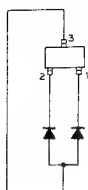
## SECTION B SEMICONDUCTOR

The circuit diagram of IC is obtained from the IC data book published by the manufacturer.

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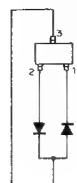
# DIODE, TRANSISTOR

(SCALE 4/1)  
TOP VIEW



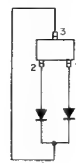
1S2836

(SCALE 4/1)  
TOP VIEW



1SS226

(SCALE 4/1)  
TOP VIEW



MA152WK

(SCALE 4/1)  
TOP VIEW



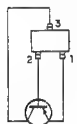
RD ? ? M-B ?

(SCALE 4/1)  
TOP VIEW



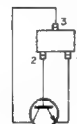
SB05-05CP

(SCALE 4/1)  
TOP VIEW



2SA1162

(SCALE 4/1)  
TOP VIEW

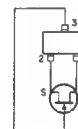


2SC1623



2SC2878

TOP VIEW (SCALE 4/1)



2SK94

(SCALE 6/1)  
TOP VIEW



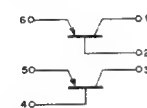
XN4608



(SCALE 6/1)  
TOP VIEW



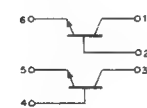
XN6401



(SCALE 6/1)  
TOP VIEW

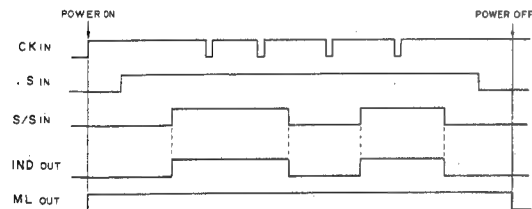
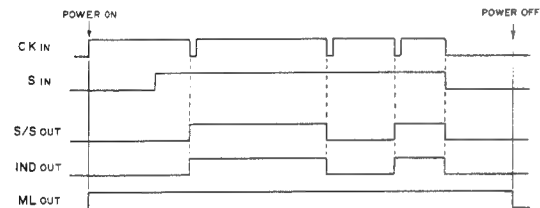
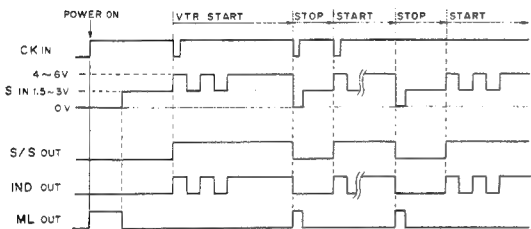
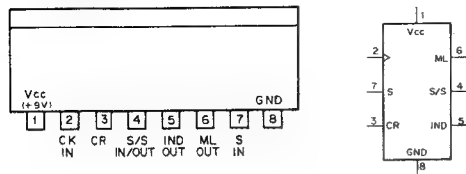


XN6501  
XN6534



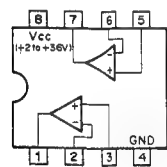
## CX518 (SONY)

INTERFACE CIRCUIT BETWEEN VTR AND CAMERA  
- SIDE VIEW -



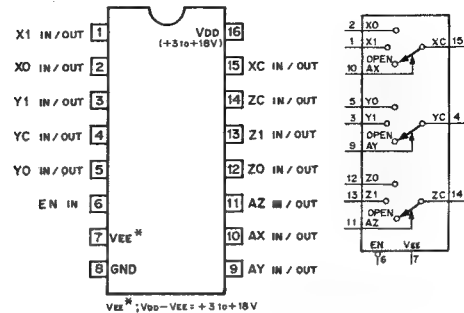
## LM2903M (RAYTHEON) FLAT PACKAGE

DUAL VOLTAGE COMPARATORS  
- TOP VIEW -



## MC14053BF (MOTOROLA) FLAT PACKAGE

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULPLEXER  
- TOP VIEW -



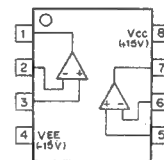
VEE\*: VDD - VEE = +3 to +18V

0; LOW LEVEL  
1; HIGH LEVEL  
X; DON'T CARE.

CONT. INPUTS	ON
EN	CHANNEL
0	0
0	1
1	X

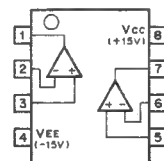
## RC2043MD (RAYTHEON) FLAT PACKAGE

OPERATIONAL AMPLIFIER  
- TOP VIEW -



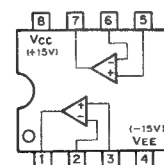
## RC4560M (RAYTHEON) FLAT PACKAGE

OPERATIONAL AMPLIFIER  
- TOP VIEW -



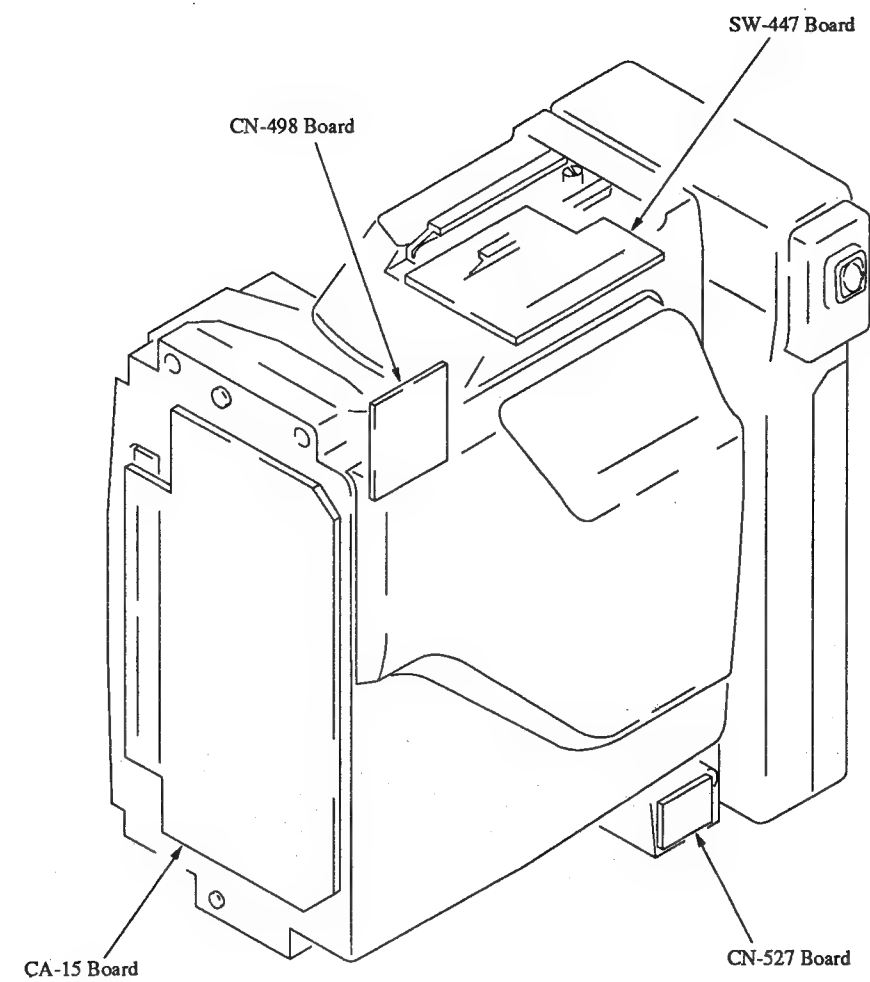
## μPC4558G2 (NEC) FLAT PACKAGE

OPERATIONAL AMPLIFIER  
- TOP VIEW -





SECTION C  
SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS

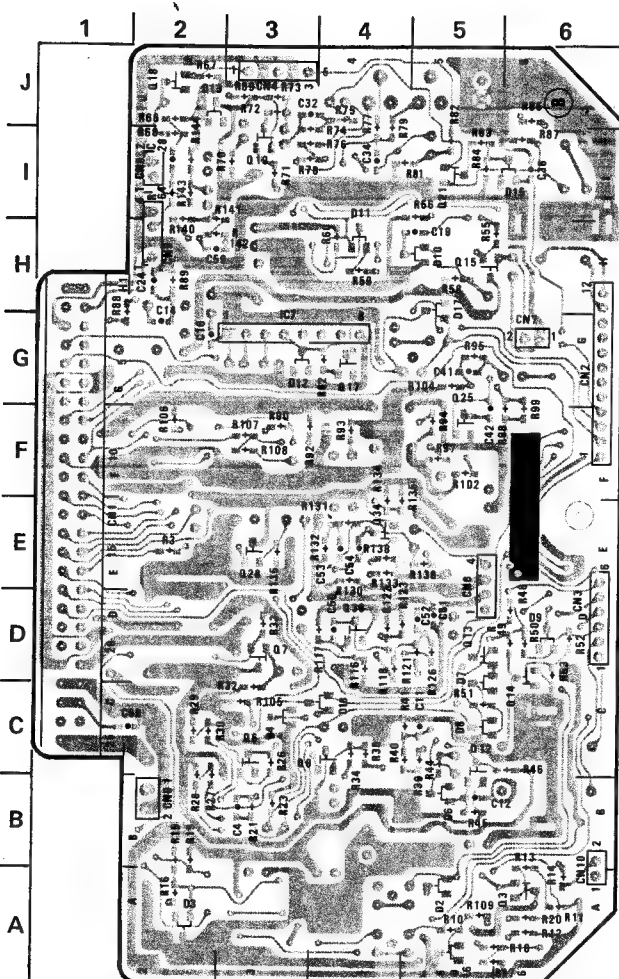
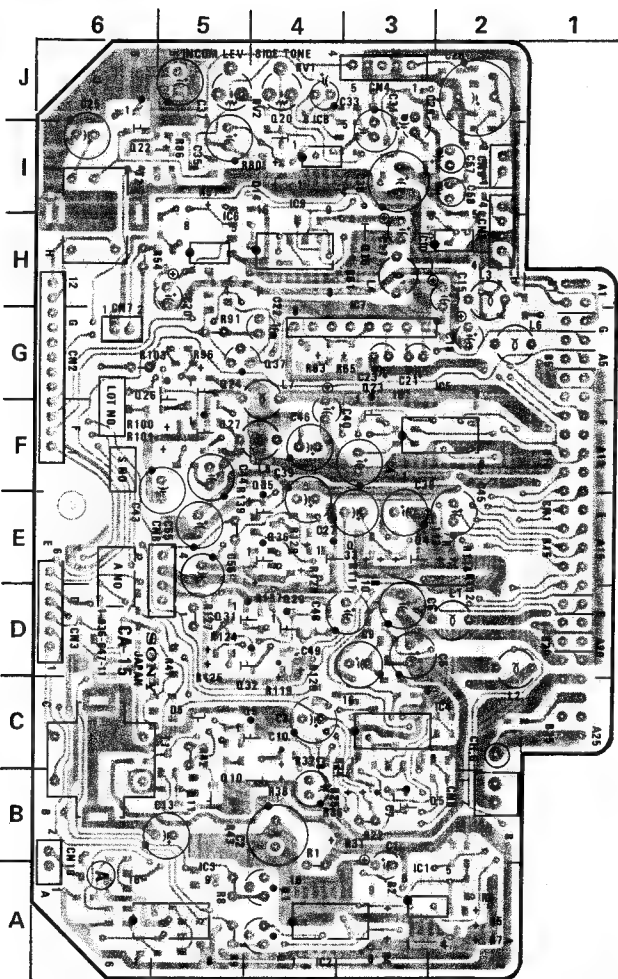




CA-15 BOARD

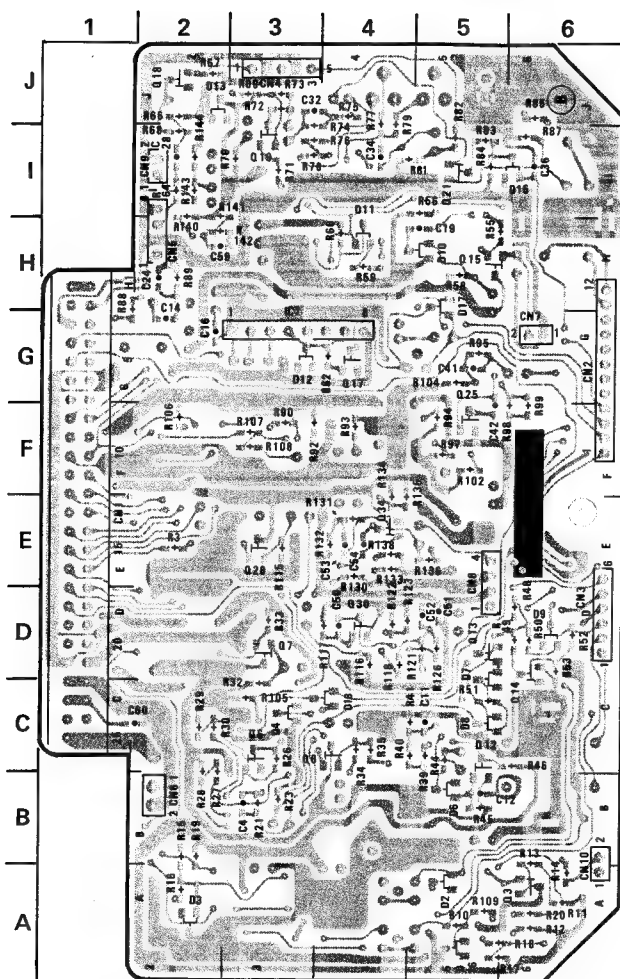
CA-15 (1-636-647-11)

CN1	E-1	Q27	F-5
CN2	G-6	Q28	E-3
CN3	D-6	Q29	D-4
CN4	J-3	Q30	D-4
CN5	H-2	Q31	D-5
CN6	B-2	Q32	C-4
CN7	G-6	Q33	E-3
CN8	E-5	Q34	E-4
CN9	I-2	Q35	F-4
CN10	A-6	Q36	E-4
		Q37	G-4
D2	A-5	RV1	J-4
D3	A-2	RV2	J-4
D4	C-3		
D5	C-5		
D6	B-5	T1	C-5
D7	D-5	T2	I-6
D8	C-5		
D9	D-6		
D10	H-5		
D11	I-4		
D12	G-3		
D13	J-2		
D14	I-4		
D15	I-6		
D16	A-5		
D17	H-5		
D18	C-4		
IC1	A-3		
IC2	A-4		
IC3	A-5		
IC4	C-2		
IC5	G-2		
IC6	H-5		
IC7	G-3		
IC8	J-4		
IC9	I-4		
IC10	H-3		
Q1	A-4		
Q2	A-4		
Q3	A-6		
Q4	E-3		
Q5	B-2		
Q6	C-3		
Q7	D-3		
Q8	C-3		
Q9	C-4		
Q10	B-5		
Q11	B-5		
Q12	C-5		
Q13	D-5		
Q14	C-6		
Q15	H-5		
Q16	H-3		
Q17	G-4		
Q18	J-2		
Q19	I-3		
Q20	J-4		
Q21	I-5		
Q22	I-6		
Q23	G-3		
Q24	G-5		
Q25	G-5		
Q26	G-6		



CA-15 (1-636-647-11)

CN1	E-1	Q27	F-5
CN2	G-6	Q28	E-3
CN3	D-6	Q29	D-4
CN4	J-3	Q30	D-4
CN5	H-2	Q31	D-5
CN6	B-2	Q32	C-4
CN7	G-6	Q33	E-3
CN8	E-5	Q34	E-4
CN9	I-2	Q35	F-4
CN10	A-6	Q36	E-4
		Q37	G-4
D2	A-5	RV1	J-4
D3	A-2	RV2	J-4
D4	C-3		
D5	C-5		
D6	B-5	T1	C-5
D7	D-5	T2	I-6
D8	C-5		
D9	D-6		
D10	H-5		
D11	I-4		
D12	G-3		
D13	J-2		
D14	I-4		
D15	I-6		
D16	A-5		
D17	H-5		
D18	C-4		
IC1	A-3		
IC2	A-4		
IC3	A-5		
IC4	C-2		
IC5	G-2		
IC6	H-5		
IC7	G-3		
IC8	J-4		
IC9	I-4		
IC10	H-3		
Q1	A-4		
Q2	A-4		
Q3	A-6		
Q4	E-3		
Q5	B-2		
Q6	C-3		
Q7	D-3		
Q8	C-3		
Q9	C-4		
Q10	B-5		
Q11	B-5		
Q12	C-5		
Q13	D-5		
Q14	C-6		
Q15	H-5		
Q16	H-3		
Q17	G-4		
Q18	J-2		
Q19	I-3		
Q20	J-4		
Q21	I-5		
Q22	I-6		
Q23	G-3		
Q24	G-5		
Q25	G-5		
Q26	G-6		

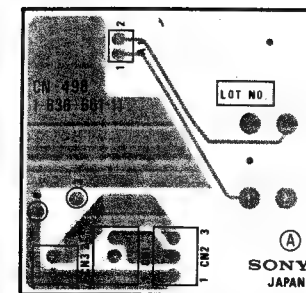


1-636-647-11 SOLDERING SIDE

CA-15 (1-636-647-11)

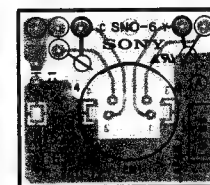
CN1	E-1	Q27	F-5
CN2	G-6	Q28	E-3
CN3	D-6	Q29	D-4
CN4	J-3	Q30	D-4
CN5	H-2	Q31	D-5
CN6	B-2	Q32	C-4
CN7	G-6	Q33	E-3
CN8	E-5	Q34	E-4
CN9	I-2	Q35	F-4
CN10	A-6	Q36	E-4
		Q37	G-4
D2	A-5	RV1	J-4
D3	A-2	RV2	J-4
D4	C-3		
D5	C-5	T1	C-5
D6	B-5	T2	I-6
D7	D-5		
D8	C-5		
D9	D-6		
D10	H-5		
D11	I-4		
D12	G-3		
D13	J-2		
D14	I-4		
D15	I-6		
D16	A-5		
D17	H-5		
D18	C-4		
IC1	A-3		
IC2	A-4		
IC3	A-5		
IC4	C-2		
IC5	G-2		
IC6	H-5		
IC7	G-3		
IC8	J-4		
IC9	I-4		
IC10	H-3		
Q1	A-4		
Q2	A-4		
Q3	A-6		
Q4	E-3		
Q5	B-2		
Q6	C-3		
Q7	D-3		
Q8	C-3		
Q9	C-4		
Q10	B-5		
Q11	B-5		
Q12	C-5		
Q13	D-5		
Q14	C-6		
Q15	H-5		
Q16	H-3		
Q17	G-4		
Q18	J-2		
Q19	I-3		
Q20	J-4		
Q21	I-5		
Q22	I-6		
Q23	G-3		
Q24	G-5		
Q25	G-5		
Q26	G-6		

CN-498 BOARD



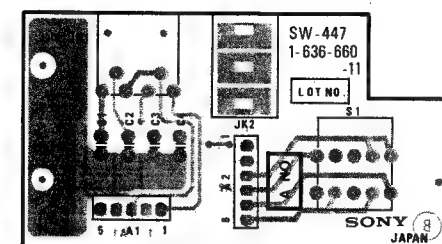
1-636-661-11 COMPONENT SIDE

CN-527 BOARD



1-636-740-12 COMPONENT SIDE

SW-447 BOARD



1-636-660-11 COMPONENT SIDE

## CA-15 BOARD

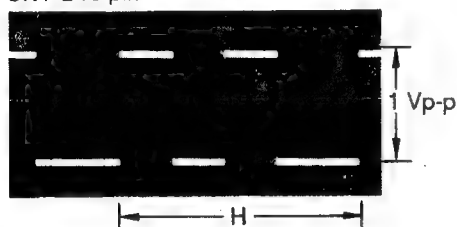
## 注意:

1. DC電圧はデジタル電圧計による値。
2. 波形写真、及びDC電圧は下記条件での測定。
  - グレースケールチャートを撮像し、波形モニターにて、ビデオ出力の白レベルが100 IREになる様にレンズ絞りをセットする。
  - GAIN : 0 dB
  - WHITE BAL : PRE
  - ABL : OFF
  - SHUTTER : OFF
  - ZEBRA : OFF
  - VF MARKER : OFF
  - PHASE : 0°
  - BARS : ON

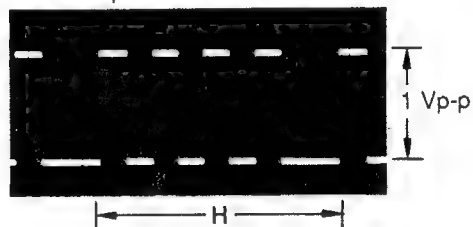
## NOTE:

1. All voltage are DC, measured with a digital voltmeter.
2. All waveforms are taken and DC voltage is measured in condition below.
  - Shoot the grayscale chart. Adjust lens iris so that a white level is 100 IRE on the waveform monitor.
  - GAIN : 0 dB
  - WHITE BAL : PRE
  - ABL : OFF
  - SHUTTER : OFF
  - ZEBRA : OFF
  - VF MARKER : OFF
  - PHASE : 0°
  - BARS : ON

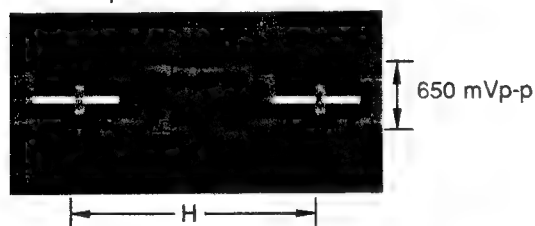
CN1-B16 pin



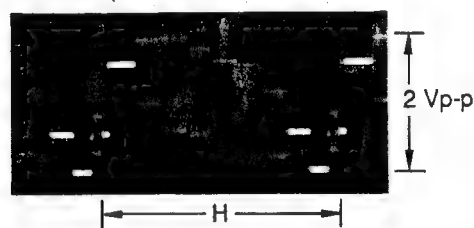
CN1-B17 pin



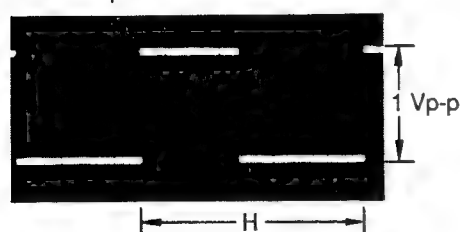
CN1-B14 pin



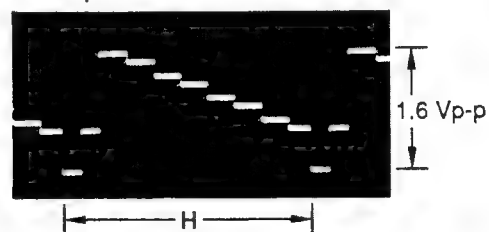
CN1-B12 pin



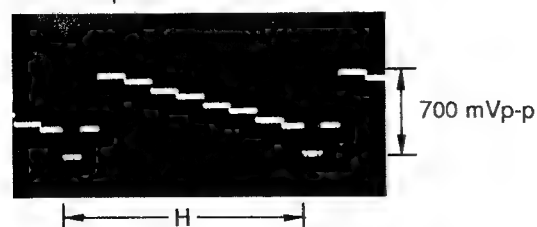
CN1-A17 pin



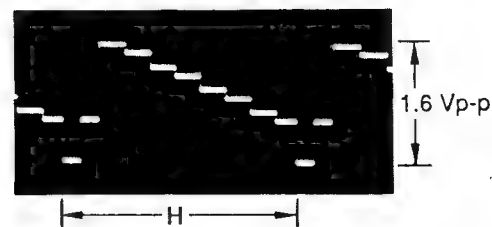
CN2-9 pin



CN1-B15 pin



Q28-emitter



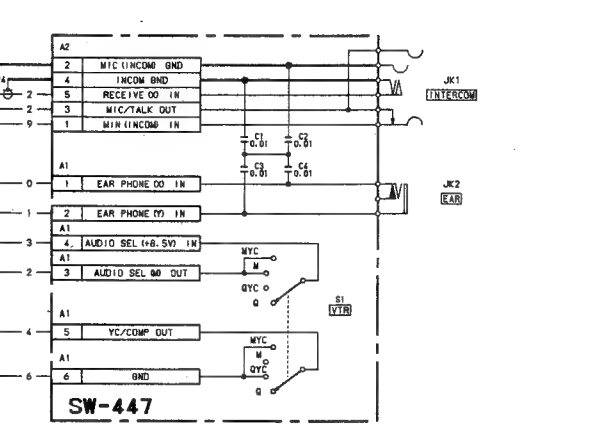
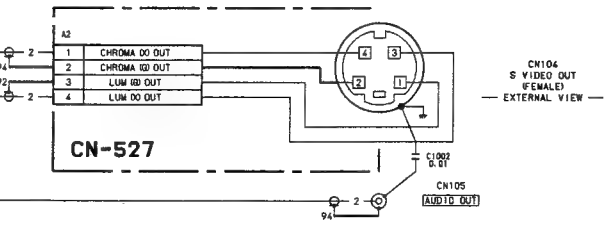
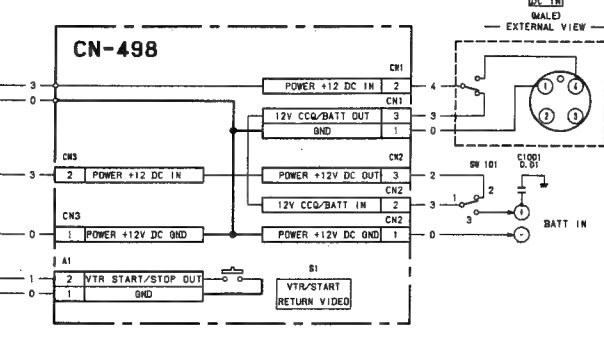
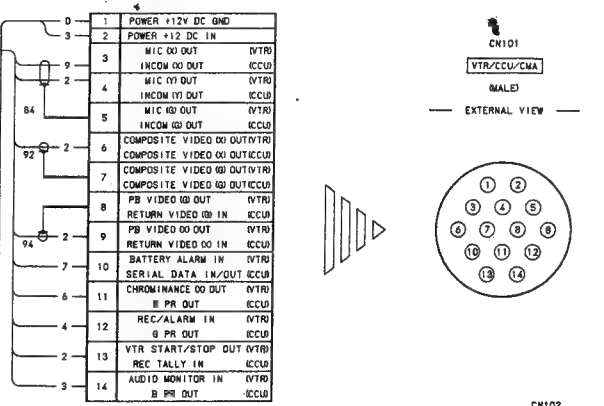
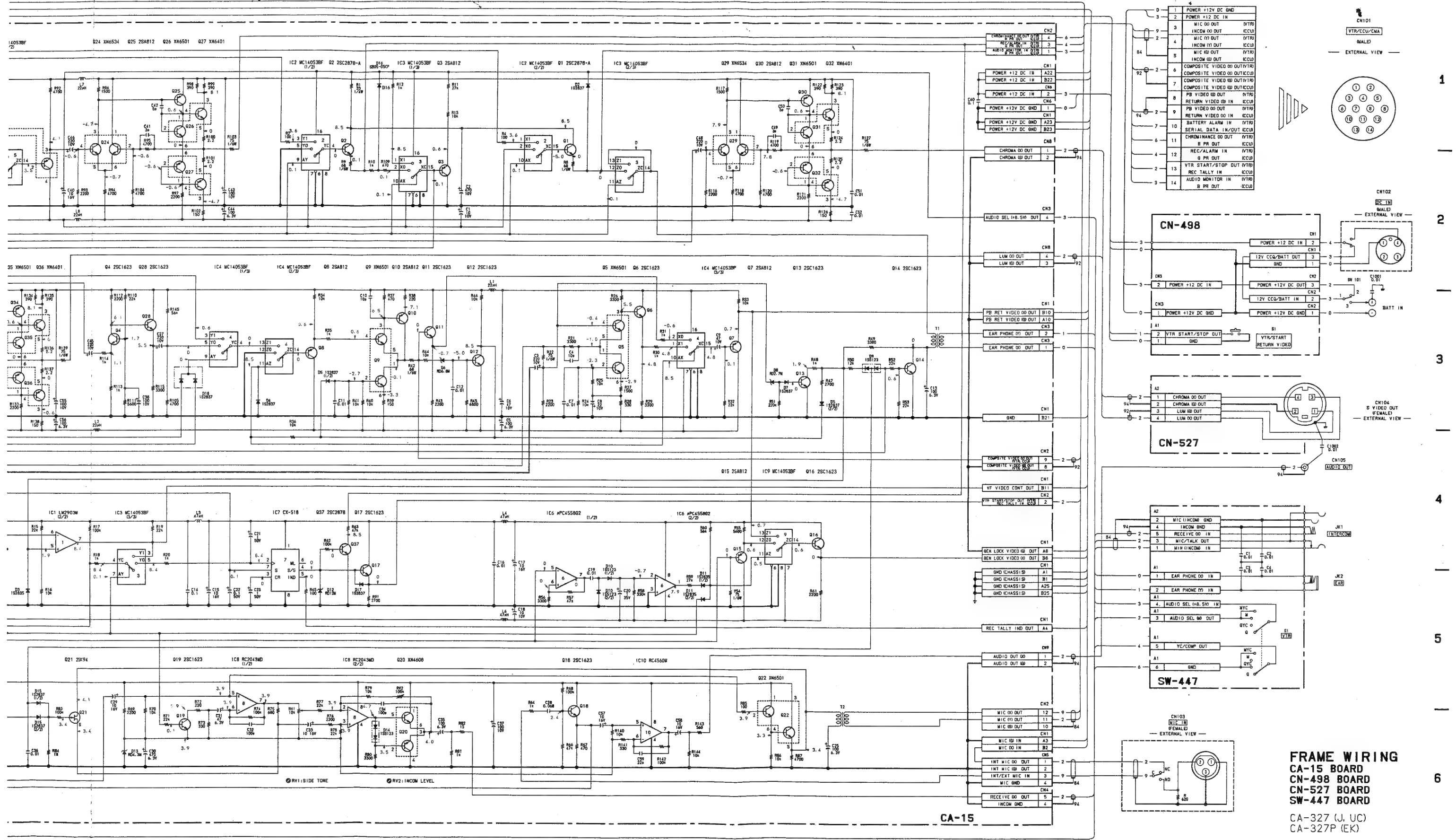


CA-15

A-327 (J, UC)  
A-327P (EK)



0




FRAME WIRING  
CA-15 BOARD  
CN-498 BOARD  
CN-527 BOARD  
SW-447 BOARD  
CA-327 (J, UC)  
CA-327P (EK)



## SECTION D SPARE PARTS

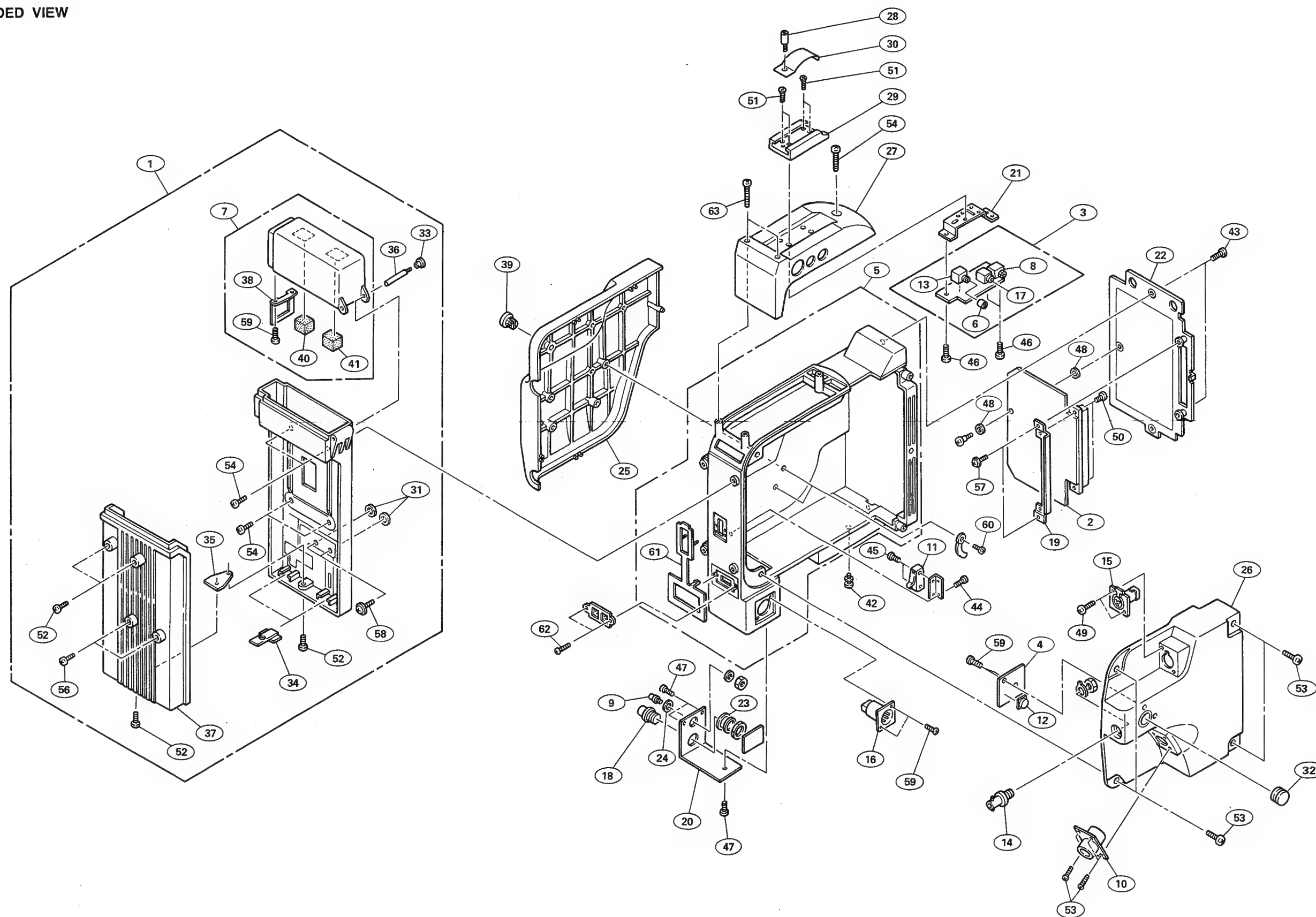
### PARTS INFORMATION

#### 1. Safety Related Component Warning

Components identified by shading marked with  on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

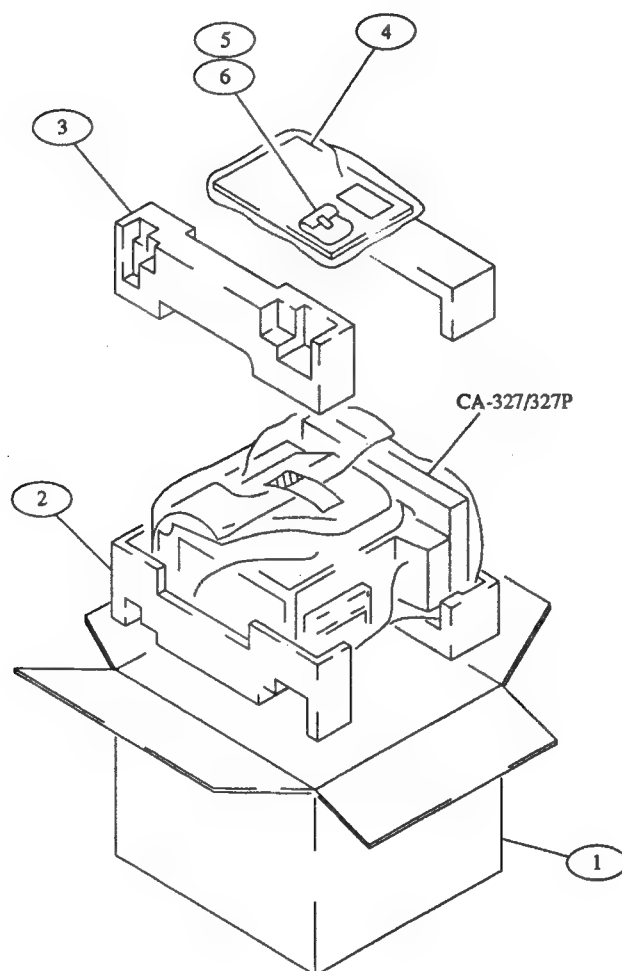
2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes" or "standardization of genuine parts."** This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present." Regarding engineering parts and diagrams changes in our engineering department, refer to SONY service bulletins and service manual supplements.
3. The parts marked with "S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Orders for parts marked with "O" will be processed, but allow for additional delivery time.
4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.
5. All capacitors are in micro farads unless otherwise specified.  
All inductors are in micro henries unless otherwise specified.  
All resistors are in ohms.

EXPLODED VIEW



No.	Part No.	SP Description
1	A-6703-651-C	s CASE ASSY, BATTERY
2	A-7515-231-A	o MOUNTED CIRCUIT BOARD, CA-15
3	A-7520-518-A	o MOUNTED CIRCUIT BOARD, SW-447
4	A-7520-519-A	o MOUNTED CIRCUIT BOARD, CN-498
5	X-3165-587-1	o CHASSIS ASSY, CA
6	X-3664-208-0	s KNOB ASSY, FADE
7	X-3717-701-3	o COVER ASSY, TOP, BATTERY
8	1-507-883-11	s JACK, SMALL TYPE, 4P "INTER COM"
9	1-507-918-00	o JACK, PIN 1P "AUDIO OUT"
10	1-508-942-12	s CONNECTOR, 14P MALE "VTR/CCU/CMA"
11	1-552-665-00	s SWITCH, MICRO
12	1-553-739-21	s SWITCH, KEY BOARD
13	1-554-955-11	s SWITCH, ROTARY "VTR"
14	1-561-781-11	s CONNECTOR, BNC "GENLOCK IN"
15	1-563-096-11	s CONNECTOR (WITH SW), 3P FEMALE "MIC IN"
16	1-564-603-11	s CONNECTOR (WITH DC SW), 4P MALE "DC IN"
17	1-566-740-11	s JACK "EAR"
18	1-568-699-11	s SOCKET, MINIATURE 4P "S VIDEO OUT"
19	3-166-318-01	o BRACKET, CONNECTOR
20	3-166-319-01	o PLATE (A), BOTTOM
21	3-166-329-01	o BRACKET, PC BOARD
22	3-166-330-01	o PANEL, CONNECTOR
23	3-167-448-01	o PLATE, GROUND
24	3-167-449-01	o INSULATOR (1)
25	3-167-450-01	o PAD, SIDE
26	3-168-373-01	o COVER, SIDE
27	3-168-436-01	o COVER, TOP
28	3-664-213-00	o SCREW, STOPPER
29	3-664-218-00	o SHOE
30	3-664-228-00	o PLATE, SPRING
31	3-669-596-00	s WASHER (2.3), STOPPER
32	3-672-221-02	s PACKING, CONTROL
33	3-703-075-00	s CAP 2, SHAFT
34	3-717-707-02	o CUSHION (2)
35	3-717-708-01	o RETAINER, CASE
36	3-717-709-01	o SHAFT, LID
37	3-718-040-01	o COVER (1), BATTERY CASE
38	3-718-172-01	o RETAINER, HOOK
39	3-725-907-01	s BUSHING, BLIND
40	3-729-720-01	o CUSHION (LEFT)
41	3-729-721-01	o CUSHION (RIGHT)
42	3-744-355-01	o SHAFT, GUIDE
43	7-621-770-67	s SCREW +B 2.6X6
44	7-621-772-18	s SCREW +B 2X4
45	7-621-772-48	s SCREW +B 2X8
46	7-621-773-86	s SCREW +B 2.6X4
47	7-621-775-10	s SCREW +B 2.6X4
48	7-623-925-11	s WASHER 4.0, NYLONE
49	7-627-556-77	s SCREW, PRECISION +P2.6X6 TYPE 1
50	7-628-254-20	s SCREW +PS 2.6X8
51	7-682-248-04	s SCREW +K 3X8
52	7-682-546-09	s SCREW +B 3X5
53	7-682-548-04	s SCREW +B 3X8
54	7-682-548-09	s SCREW +B 3X8
55	7-682-553-09	s SCREW +B 3X20
56	7-682-559-09	s SCREW +B 4X5
57	7-682-947-01	s SCREW +PSW 3X6
58	7-682-948-01	s SCREW +PSW 3X8
59	7-685-133-19	s SCREW +P 2.6X6 TYPE1
60	7-685-649-79	s SCREW +BTP 3X14 TYPE2 N-S
61	3-168-435-01	o PACKING, DROP PROTECTION
62	7-621-772-30	s SCREW +B 2X6
63	7-682-553-09	s SCREW +B 3X12

No.	Part No.	SP DESCRIPTION
1	3-167-618-01	o CARTON, INDIVIDUAL(UC)
	3-167-620-01	o CARTON, INDIVIDUAL(EK)1
2	3-167-622-01	o CUSHION(LOWER)
3	3-167-623-01	o CUSHION(UPPER)
4	3-752-392-11	s MANUAL, INSTRUCTION
5	7-682-560-09	s SCREW +B4x6
6	7-682-563-09	s SCREW +B4x12



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RESISTOR, CHIP  
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Part No. SP Description

1-216-295-00	s RES, CHIP	0	5%	1/10W
1-216-298-00	s RES, CHIP	2.2	5%	1/10W
1-216-302-00	s RES, CHIP	2.7	5%	1/10W
1-216-304-11	s RES, CHIP	3.3	5%	1/10W
1-216-306-11	s RES, CHIP	3.9	5%	1/10W
1-216-308-00	s RES, CHIP	4.7	5%	1/10W
1-216-309-00	s RES, CHIP	5.6	5%	1/10W
1-216-311-00	s RES, CHIP	6.8	5%	1/10W
1-216-313-00	s RES, CHIP	8.2	5%	1/10W
1-216-001-00	s RES, CHIP	10	5%	1/10W
1-216-003-11	s RES, CHIP	12	5%	1/10W
1-216-005-00	s RES, CHIP	15	5%	1/10W
1-216-007-00	s RES, CHIP	18	5%	1/10W
1-216-009-00	s RES, CHIP	22	5%	1/10W
1-216-011-00	s RES, CHIP	27	5%	1/10W
1-216-013-00	s RES, CHIP	33	5%	1/10W
1-216-015-00	s RES, CHIP	39	5%	1/10W
1-216-017-00	s RES, CHIP	47	5%	1/10W
1-216-019-00	s RES, CHIP	56	5%	1/10W
1-216-021-00	s RES, CHIP	68	5%	1/10W
1-216-023-00	s RES, CHIP	82	5%	1/10W
1-216-025-00	s RES, CHIP	100	5%	1/10W
1-216-027-00	s RES, CHIP	120	5%	1/10W
1-216-029-00	s RES, CHIP	150	5%	1/10W
1-216-031-00	s RES, CHIP	180	5%	1/10W
1-216-033-00	s RES, CHIP	220	5%	1/10W
1-216-035-00	s RES, CHIP	270	5%	1/10W
1-216-037-00	s RES, CHIP	330	5%	1/10W
1-216-039-00	s RES, CHIP	390	5%	1/10W
1-216-041-00	s RES, CHIP	470	5%	1/10W
1-216-043-00	s RES, CHIP	560	5%	1/10W
1-216-045-00	s RES, CHIP	680	5%	1/10W
1-216-047-00	s RES, CHIP	820	5%	1/10W
1-216-049-00	s RES, CHIP	1k	5%	1/10W
1-216-051-00	s RES, CHIP	1.2k	5%	1/10W
1-216-053-00	s RES, CHIP	1.5k	5%	1/10W
1-216-055-00	s RES, CHIP	1.8k	5%	1/10W
1-216-057-00	s RES, CHIP	2.2k	5%	1/10W
1-216-059-00	s RES, CHIP	2.7k	5%	1/10W
1-216-061-00	s RES, CHIP	3.3k	5%	1/10W
1-216-063-00	s RES, CHIP	3.9k	5%	1/10W
1-216-065-00	s RES, CHIP	4.7k	5%	1/10W
1-216-067-00	s RES, CHIP	5.6k	5%	1/10W
1-216-069-00	s RES, CHIP	6.8k	5%	1/10W
1-216-071-00	s RES, CHIP	8.2k	5%	1/10W
1-216-073-00	s RES, CHIP	10k	5%	1/10W
1-216-075-00	s RES, CHIP	12k	5%	1/10W
1-216-077-00	s RES, CHIP	15k	5%	1/10W
1-216-079-00	s RES, CHIP	18k	5%	1/10W
1-216-081-00	s RES, CHIP	22k	5%	1/10W
1-216-083-00	s RES, CHIP	27k	5%	1/10W
1-216-085-00	s RES, CHIP	33k	5%	1/10W
1-216-748-11	s RES, CHIP	39k	5%	1/10W
1-216-089-00	s RES, CHIP	47k	5%	1/10W
1-216-091-00	s RES, CHIP	56k	5%	1/10W

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RESISTOR, CHIP  
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Part No. SP Description

1-216-093-00	s RES, CHIP	68k	5%	1/10W
1-216-095-00	s RES, CHIP	82k	5%	1/10W
1-216-097-00	s RES, CHIP	100k	5%	1/10W
1-216-099-00	s RES, CHIP	120k	5%	1/10W
1-216-101-00	s RES, CHIP	150k	5%	1/10W
1-216-103-00	s RES, CHIP	180k	5%	1/10W
1-216-105-00	s RES, CHIP	220k	5%	1/10W
1-216-107-00	s RES, CHIP	270k	5%	1/10W
1-216-109-00	s RES, CHIP	330k	5%	1/10W
1-216-111-00	s RES, CHIP	390k	5%	1/10W
1-216-113-00	s RES, CHIP	470k	5%	1/10W
1-216-115-00	s RES, CHIP	560k	5%	1/10W
1-216-117-00	s RES, CHIP	680k	5%	1/10W
1-216-119-00	s RES, CHIP	820k	5%	1/10W
1-216-121-00	s RES, CHIP	1.0M	5%	1/10W
1-216-123-11	s RES, CHIP	1.2M	5%	1/10W
1-216-125-00	s RES, CHIP	1.5M	5%	1/10W
1-216-127-11	s RES, CHIP	1.8M	5%	1/10W
1-216-129-00	s RES, CHIP	2.2M	5%	1/10W
1-216-131-11	s RES, CHIP	2.7M	5%	1/10W
1-216-133-00	s RES, CHIP	3.3M	5%	1/10W

CA-15 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7515-231-A	o MOUNTED CIRCUIT BOARD "CA-15"
C1	1-131-377-00	s TANTALUM 10uF 10% 10V
C2	1-124-472-11	s ELECT 470uF 20% 10V
C3	1-126-176-11	s ELECT 220uF 20% 10V
C4	1-163-227-11	s CERAMIC 10PF 5% 50V
C5	1-124-584-00	s ELECT 100uF 20% 10V
C6	1-124-589-11	s ELECT 47uF 20% 10V
C7	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C8	1-124-638-11	s ELECT 22uF 20% 6.3V
C9	1-124-589-11	s ELECT 47uF 20% 10V
C10	1-163-227-11	s CERAMIC 10PF 5% 50V
C11	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C12	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C13	1-124-584-00	s ELECT 100uF 20% 10V
C14	1-163-038-00	s CERAMIC CHIP 0.1uF 25V
C15	1-131-365-00	s TANTALUM 10uF 10% 16V
C16	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C17	1-131-365-00	s TANTALUM 10uF 10% 16V
C18	1-131-377-00	s TANTALUM 10uF 10% 10V
C19	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C20	1-131-347-00	s TANTALUM 1uF 10% 35V
C21	1-126-301-11	s ELECT 1uF 20% 50V
C22	1-124-463-00	s ELECT 0.1uF 20% 50V
C23	1-126-301-11	s ELECT 1uF 20% 50V
C24	1-163-038-00	s CERAMIC CHIP 0.1uF 25V
C25	1-124-584-00	s ELECT 100uF 20% 10V
C26	1-124-893-11	s ELECT 2200uF 20% 6.3V
C27	1-126-176-11	s ELECT 220uF 20% 10V
C28	1-163-036-00	s CERAMIC CHIP 0.068uF 50V
C29	1-126-157-11	s ELECT 10uF 20% 16V
C30	1-124-472-11	s ELECT 470uF 20% 10V
C31	1-126-154-11	s ELECT 47uF 20% 6.3V
C32	1-163-251-11	s CERAMIC 100PF 5% 50V
C33	1-126-157-11	s ELECT 10uF 20% 16V
C34	1-163-251-11	s CERAMIC 100PF 5% 50V
C35	1-124-584-00	s ELECT 100uF 20% 10V
C36	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C37	1-124-584-00	s ELECT 100uF 20% 10V
C38	1-124-584-00	s ELECT 100uF 20% 10V
C39	1-126-176-11	s ELECT 220uF 20% 10V
C40	1-131-365-00	s TANTALUM 10uF 10% 16V
C41	1-163-086-00	s CERAMIC CHIP 3PF 0.25PF 50V
C42	1-163-088-00	s CERAMIC CHIP 5PF 0.25PF 50V
C43	1-124-584-00	s ELECT 100uF 20% 10V
C44	1-124-584-00	s ELECT 100uF 20% 10V
C45	1-126-176-11	s ELECT 220uF 20% 10V
C46	1-126-176-11	s ELECT 220uF 20% 10V
C47	1-126-176-11	s ELECT 220uF 20% 10V
C48	1-126-176-11	s ELECT 220uF 20% 10V
C49	1-163-086-00	s CERAMIC CHIP 3PF 0.25PF 50V
C50	1-163-088-00	s CERAMIC CHIP 5PF 0.25PF 50V
C51	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C52	1-164-232-11	s CERAMIC CHIP 0.01uF 20% 100V
C53	1-163-086-00	s CERAMIC CHIP 3PF 0.25PF 50V
C54	1-163-088-00	s CERAMIC CHIP 5PF 0.25PF 50V
C55	1-124-584-00	s ELECT 100uF 20% 10V
C56	1-124-584-00	s ELECT 100uF 20% 10V
C57	1-126-157-11	s ELECT 10uF 20% 16V

(CA-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C58	1-126-157-11	s ELECT 10uF 20% 16V
C59	1-163-235-11	s CERAMIC 22PF 5% 50V
CN1	1-566-581-11	o CONNECTOR, MULTI 50P
CN2	1-506-477-11	o CONNECTOR, 12P, MALE
	1-569-205-11	o PLUG HOUSING, 12P
	1-569-191-11	o TERMINAL, SOLDERLESS
	1-569-193-11	o CONTACT
CN3	1-506-471-11	o CONNECTOR, 6P, MALE
CN4	1-506-470-11	o CONNECTOR, 5P, MALE
CN5	1-506-469-11	o CONNECTOR, 4P, MALE
	1-569-197-11	o PLUG HOUSING, 4P
	1-569-191-11	o TERMINAL, SOLDERLESS
	1-569-193-11	o CONTACT
CN6	1-560-356-00	o CONNECTOR POST HEADER, ILG (2P)
CN7	1-506-467-11	o CONNECTOR, 2P, MALE
	1-569-195-11	s HOUSING, CONNECTOR 2P
	1-569-191-11	o TERMINAL, SOLDERLESS
	1-569-193-11	o CONTACT
CN8	1-506-469-11	o CONNECTOR, 4P, MALE
CN9	1-564-467-11	o CONNECTOR, 2P, MALE
	1-569-195-11	s HOUSING, CONNECTOR 2P
	1-569-191-11	o TERMINAL, SOLDERLESS
	1-569-193-11	o CONTACT
CN10	1-506-467-11	o CONNECTOR, 2P, MALE
D2	8-719-104-31	s DIODE 1S2838
D3	8-719-104-34	s DIODE 1S2836
D4	8-719-104-31	s DIODE 1S2838
D5	8-719-104-31	s DIODE 1S2838
D6	8-719-106-16	s DIODE RD6.8M-B1
D7	8-719-104-34	s DIODE 1S2836
D8	8-719-105-32	s DIODE RD2.7M-B2
D9	8-719-800-76	s DIODE 1SS226
D10	8-719-800-76	s DIODE 1SS226
D11	8-719-104-34	s DIODE 1S2836
D12	8-719-106-70	s DIODE RD12M-B1
D13	8-719-105-63	s DIODE RD4.3M-B1
D14	8-719-800-76	s DIODE 1SS226
D15	8-719-104-31	s DIODE 1S2838
D16	8-719-938-75	s SB05-05CP
D17	8-719-104-31	s DIODE 1S2838
D18	8-719-104-31	s DIODE 1S2838
IC1	8-759-981-65	s IC LM2903M
IC2	8-759-300-71	s IC MC14053BF
IC3	8-759-300-71	s IC MC14053BF
IC4	8-759-300-71	s IC MC14053BF
IC5	8-759-300-71	s IC MC14053BF
IC6	8-759-100-96	s IC UPC4558G2
IC7	8-759-605-18	s IC CX518
IC8	8-759-981-58	s IC RC2043MD
IC9	8-759-300-71	s IC MC14053BF
IC10	8-759-981-99	s IC RC4560M
L1	1-408-413-00	s MICRO 22uH
L2	1-408-413-00	s MICRO 22uH
L3	1-410-478-11	s 47uH
L4	1-410-478-11	s 47uH
L6	1-410-478-11	s 47uH

## (CA-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
L7	1-408-413-00	s MICRO 22uH
L8	1-408-413-00	s MICRO 22uH
Q1	8-729-201-05	s TRANSISTOR 2SC2878-B
Q2	8-729-201-05	s TRANSISTOR 2SC2878-B
Q3	8-729-216-22	s TRANSISTOR 2SA1162
Q4	8-729-100-66	s TRANSISTOR 2SC1623
Q5	8-729-402-19	s TRANSISTOR XN6501
Q6	8-729-100-66	s TRANSISTOR 2SC1623
Q7	8-729-216-22	s TRANSISTOR 2SA1162
Q8	8-729-216-22	s TRANSISTOR 2SA1162
Q9	8-729-402-19	s TRANSISTOR XN6501
Q10	8-729-216-22	s TRANSISTOR 2SA1162
Q11	8-729-100-66	s TRANSISTOR 2SC1623
Q12	8-729-100-66	s TRANSISTOR 2SC1623
Q13	8-729-100-66	s TRANSISTOR 2SC1623
Q14	8-729-100-66	s TRANSISTOR 2SC1623
Q15	8-729-216-22	s TRANSISTOR 2SA1162
Q16	8-729-100-66	s TRANSISTOR 2SC1623
Q17	8-729-100-66	s TRANSISTOR 2SC1623
Q18	8-729-100-66	s TRANSISTOR 2SC1623
Q19	8-729-100-66	s TRANSISTOR 2SC1623
Q20	8-729-402-84	s TRANSISTOR XN4601
Q21	8-729-109-41	s TRANSISTOR 2SK94-X1
Q22	8-729-402-19	s TRANSISTOR XN6501
Q23	8-729-402-84	s TRANSISTOR XN4601
Q24	8-729-403-32	s TRANSISTOR XN6534
Q25	8-729-216-22	s TRANSISTOR 2SA1162
Q26	8-729-402-19	s TRANSISTOR XN6501
Q27	8-729-402-78	s TRANSISTOR XN6401
Q28	8-729-100-66	s TRANSISTOR 2SC1623
Q29	8-729-403-32	s TRANSISTOR XN6534
Q30	8-729-216-22	s TRANSISTOR 2SA1162
Q31	8-729-402-19	s TRANSISTOR XN6501
Q32	8-729-402-78	s TRANSISTOR XN6401
Q33	8-729-403-32	s TRANSISTOR XN6534
Q34	8-729-216-22	s TRANSISTOR 2SA1162
Q35	8-729-402-19	s TRANSISTOR XN6501
Q36	8-729-402-78	s TRANSISTOR XN6401
Q37	8-729-201-05	s TRANSISTOR 2SC2878-B
R1	1-249-399-11	s CARBON 33 5% 1/4W
R8	1-215-393-00	s METAL 68 1% 1/6W
R9	1-215-393-00	s METAL 68 1% 1/6W
R22	1-215-394-00	s METAL 75 1% 1/6W
R42	1-215-393-00	s METAL 68 1% 1/6W
R54	1-215-394-00	s METAL 75 1% 1/6W
R91	1-215-431-00	s METAL 2.7K 1% 1/6W
R95	1-216-667-11	s METAL CHIP 4.7K 0.50% 1/10W
R103	1-215-394-00	s METAL 75 1% 1/6W
R104	1-216-667-11	s METAL CHIP 4.7K 0.50% 1/10W
R119	1-216-667-11	s METAL CHIP 4.7K 0.50% 1/10W
R120	1-216-667-11	s METAL CHIP 4.7K 0.50% 1/10W
R127	1-215-394-00	s METAL 75 1% 1/6W
R131	1-216-667-11	s METAL CHIP 4.7K 0.50% 1/10W
R132	1-216-667-11	s METAL CHIP 4.7K 0.50% 1/10W
R139	1-215-394-00	s METAL 75 1% 1/6W
RV1	1-226-703-11	s RES, ADJ, METAL 10K
RV2	1-226-775-11	s RES, ADJ, METAL 100K

## (CA-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
T1	1-427-270-XX	s TRANSFORMER, OUTPUT
T2	1-427-487-00	s TRANSFORMER, OUTPUT

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CN-498 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
lpc	A-7520-519-A	o MOUNTED CIRCUIT BOARD "CN-498"
CN1	1-506-702-11 1-561-515-00 1-560-372-00	o CONNECTOR, ILG 3P, o HOUSING, ILG 3P FEMALE o CONTACT, AWG22-28
CN2	1-506-702-11 1-561-515-00 1-560-372-00	o CONNECTOR, ILG 3P, o HOUSING, ILG 3P FEMALE o CONTACT, AWG22-28
CN3	1-560-356-00 1-561-514-00 1-560-372-00	o CONNECTOR POST HEADER, ILG (2P) MAL o HOUSING, ILG 2P FEMALE o CONTACT, AWG22-28
CN6	1-561-514-00 1-560-372-00	o HOUSING, ILG 2P FEMALE o CONTACT, AWG22-28
CN10	1-569-195-11 1-562-735-11 1-564-831-11 1-569-193-11	s HOUSING, CONNECTOR 2P o HOUSING, 2P o CONTACT o CONTACT
S1	1-553-739-21	s SWITCH, PUSH

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CN-527 BOARD  
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Ref. No. or Q'ty	Part No.	SP Description
lpc	1-636-740-12	o PRINTED CIRCUIT BOARD "CN-527"
CN8	1-569-197-11 1-569-191-11 1-569-193-11	o HOUSING, CONNECTER 4P o CONTACT o CONTACT

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SW-447 BOARD  
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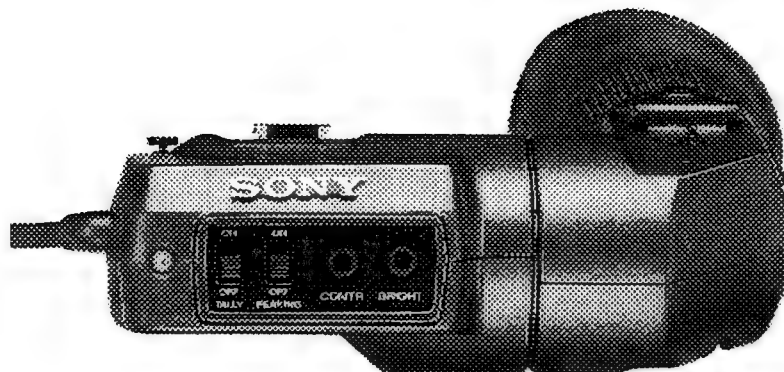
Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7520-518-A	o MOUNTED CIRCUIT BOARD "SW-447"
C1	1-161-051-00	s CERAMIC 0.01uF 10% 25V
C2	1-161-051-00	s CERAMIC 0.01uF 10% 25V
C3	1-161-051-00	s CERAMIC 0.01uF 10% 25V
C4	1-161-051-00	s CERAMIC 0.01uF 10% 25V
CN3	1-569-199-11	o PLUG HOUSING, 6P
	1-562-739-11	o HOUSING, CONNECTOR 6P
	1-564-831-11	o CONTACT
	1-569-193-11	o CONTACT
CN4	1-569-198-11	o PLUG HOUSING, 5P
	1-562-738-11	o HOUSING, 5P
	1-564-831-11	o CONTACT
	1-569-191-11	o TERMINAL, SOLDERLESS
	1-569-193-11	o CONTACT
JK1	1-507-883-00	s JACK, SMALL TYPE 4P
JK2	1-566-740-11	s JACK
S1	1-554-955-11	s SWITCH, ROTARY "VTR"

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FRAME  
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Ref. No. or Q'ty	Part No.	SP Description
C1001	1-161-051-00	s CERAMIC 0.01uF 10% 25V
C1002	1-161-051-00	s CERAMIC 0.01uF 10% 25V
CN101	1-508-942-00	s RECEPTACLE, 14P MAIL "VTR/CCU/CMA"
CN102	1-564-603-11	s CONNECTOR WITH DC SW, 4P, MALE
CN103	1-563-096-11	s RECEPTACLE, 3P FEMAIL(WITH SW)
CN104	1-568-699-11	s SOCKET, MINIATURE(ROUND) 4P "MIC IN"
CN105	1-507-918-00	o JACK, 1P "AUDIO OUT" "S VIDEO OUT"
CN106	1-561-781-11	s CONNECTOR, BNC, FEMALE
R1001	1-247-826-00	s CARBON 620 5% 1/4W
SW101	1-552-665-00	s SWITCH, MICRO



## 1.5INCH ELECTRONIC VIEWFINDER



### SPECIFICATIONS

Picture tube	1.5-inch monochrome
Indicators	REC/TALLY indicator BATT indicator SHUTTER indicator GAIN UP indicator
Resolution	400 lines
Power requirements	12 V DC
Power consumption	2.3 W
Weight	Approx. 500 g (1 lb 2 oz)
Dimensions	Approx. 182 × 68 × 205 mm (w/h/d)
Supplied accessory	Operating Instructions (1)

Design and specifications are subject to change without notice.

**SONY<sup>®</sup>**  
**SERVICE MANUAL**

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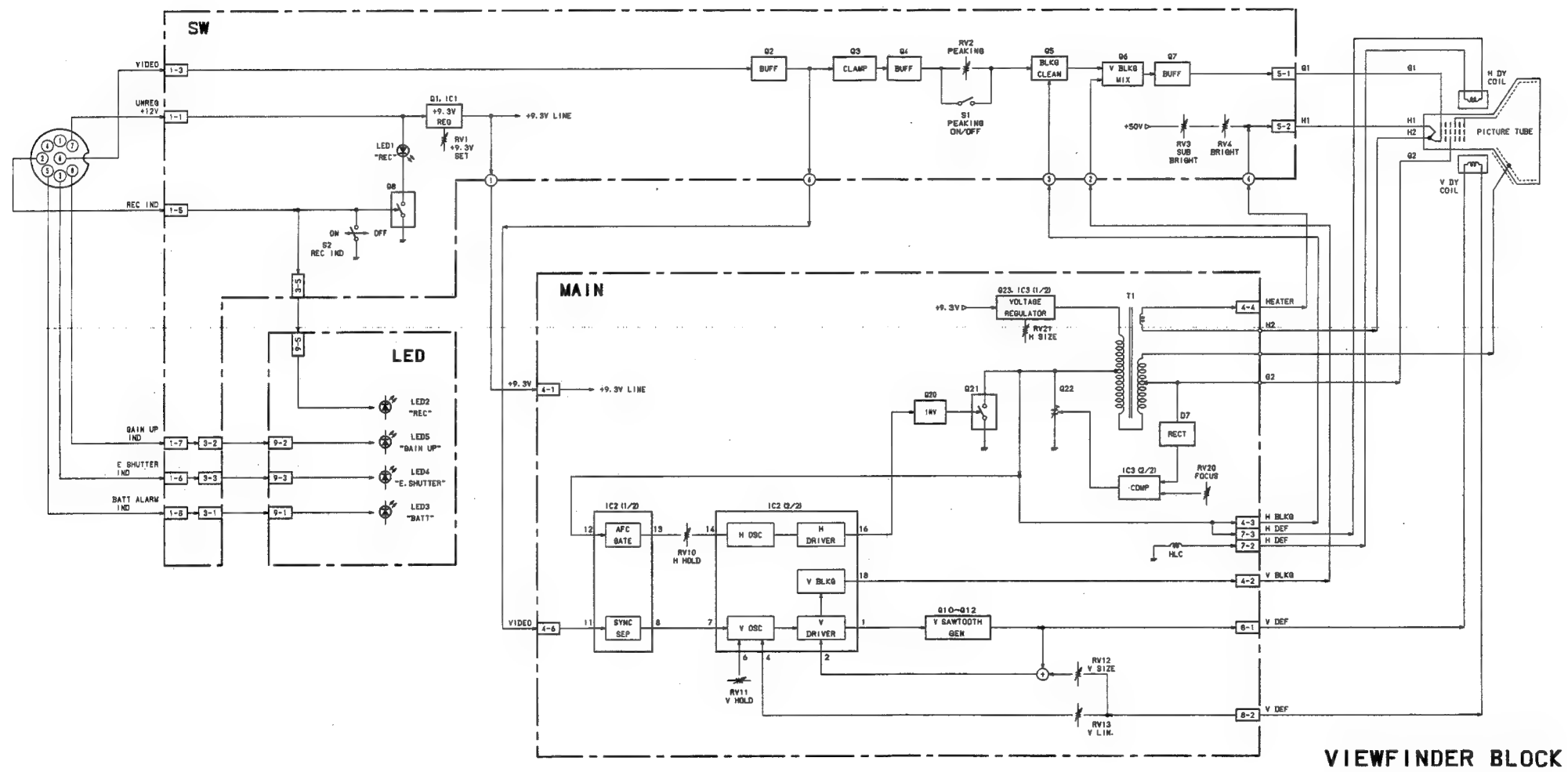
### D. SPARE PARTS

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# SECTION A BLOCK DIAGRAM

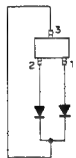


## SECTION B SEMICONDUCTOR PIN ASSIGNMENTS

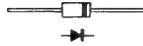
The circuit diagram of IC is obtained from the IC data book published by the manufacturer.

### < DIODE >

TOP VIEW (SCALE 4/1)

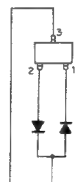


1S2837  
DAN202K



1SS133  
1SS136  
ERA15-06  
ERA22-08

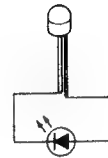
TOP VIEW (SCALE 4/1)



DA204K



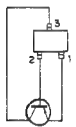
SLH-56VT



TLO102A  
TLR109A

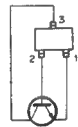
### < TRANSISTOR >

TOP VIEW (SCALE 4/1)



2SA812  
2SB624

TOP VIEW (SCALE 4/1)



2SC2812  
2SC2814  
2SC3722K



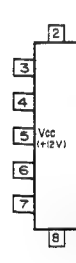
2SD1220



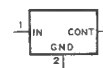
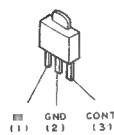
2SK612

### < IC >

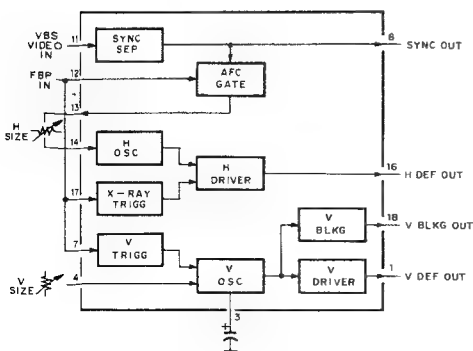
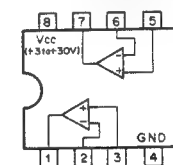
HA11423MP (HITACHI) FLAT PACKAGE  
TV H/V SYNC SIGNAL PROCESSOR  
- TOP VIEW -



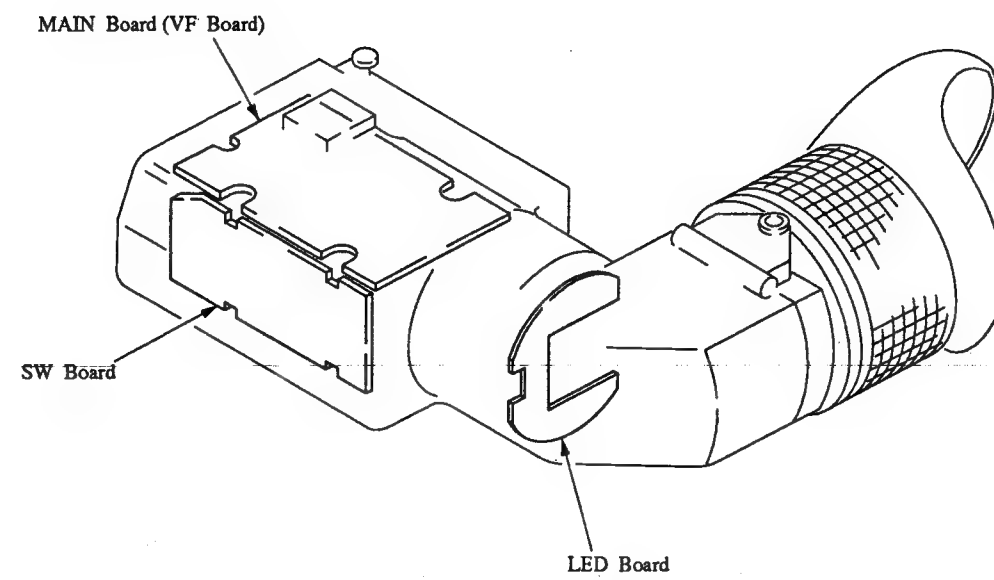
M5236ML (MITSUBISI)  
ADJUSTABLE VOLTAGE REGULATOR



uPC358G2 (NEC) FLAT PACKAGE  
DUAL OPERATIONAL AMPLIFIERS  
- TOP VIEW -

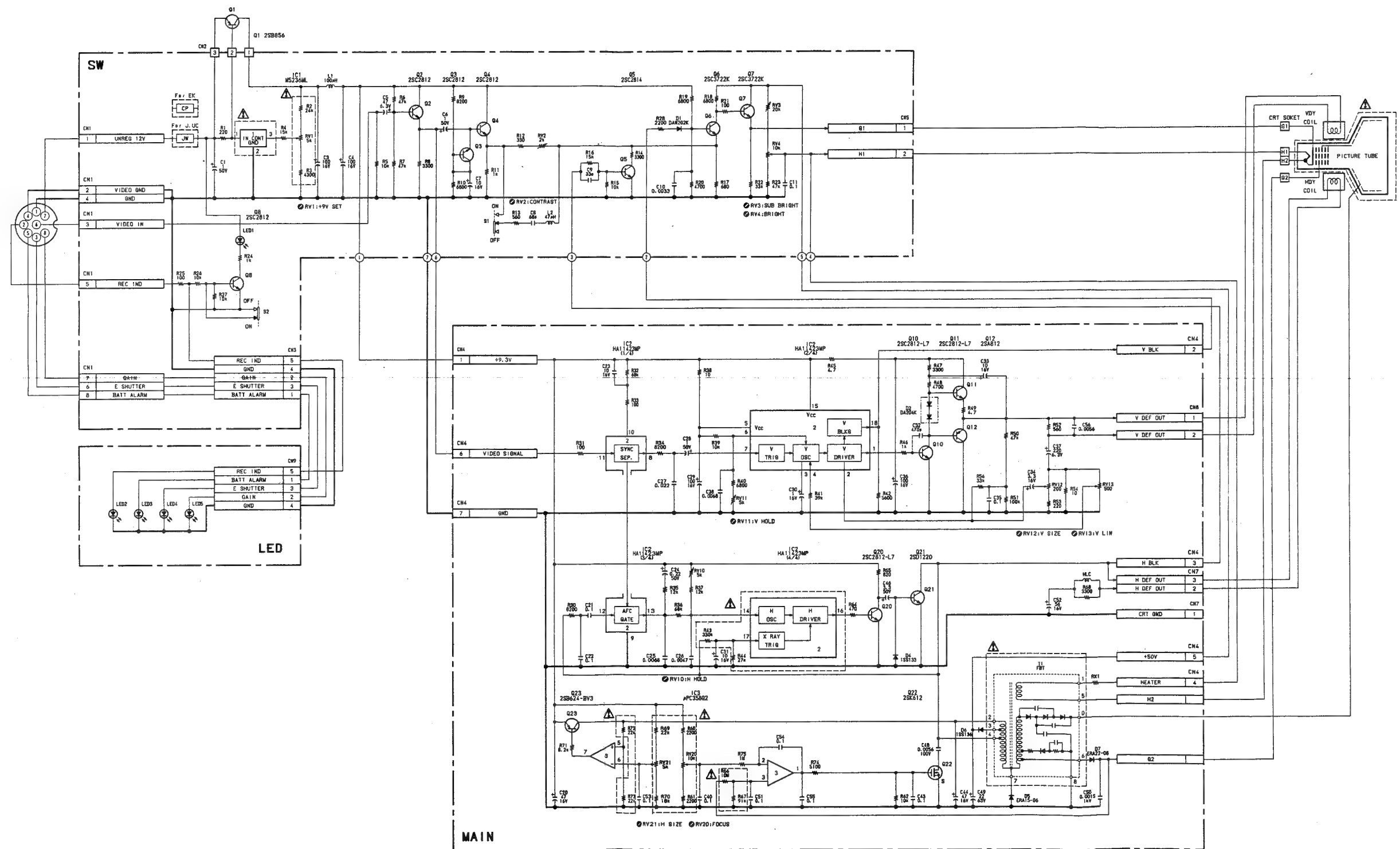


SECTION C  
SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS






FRAME



## SECTION D SPARE PARTS

### PARTS INFORMATION

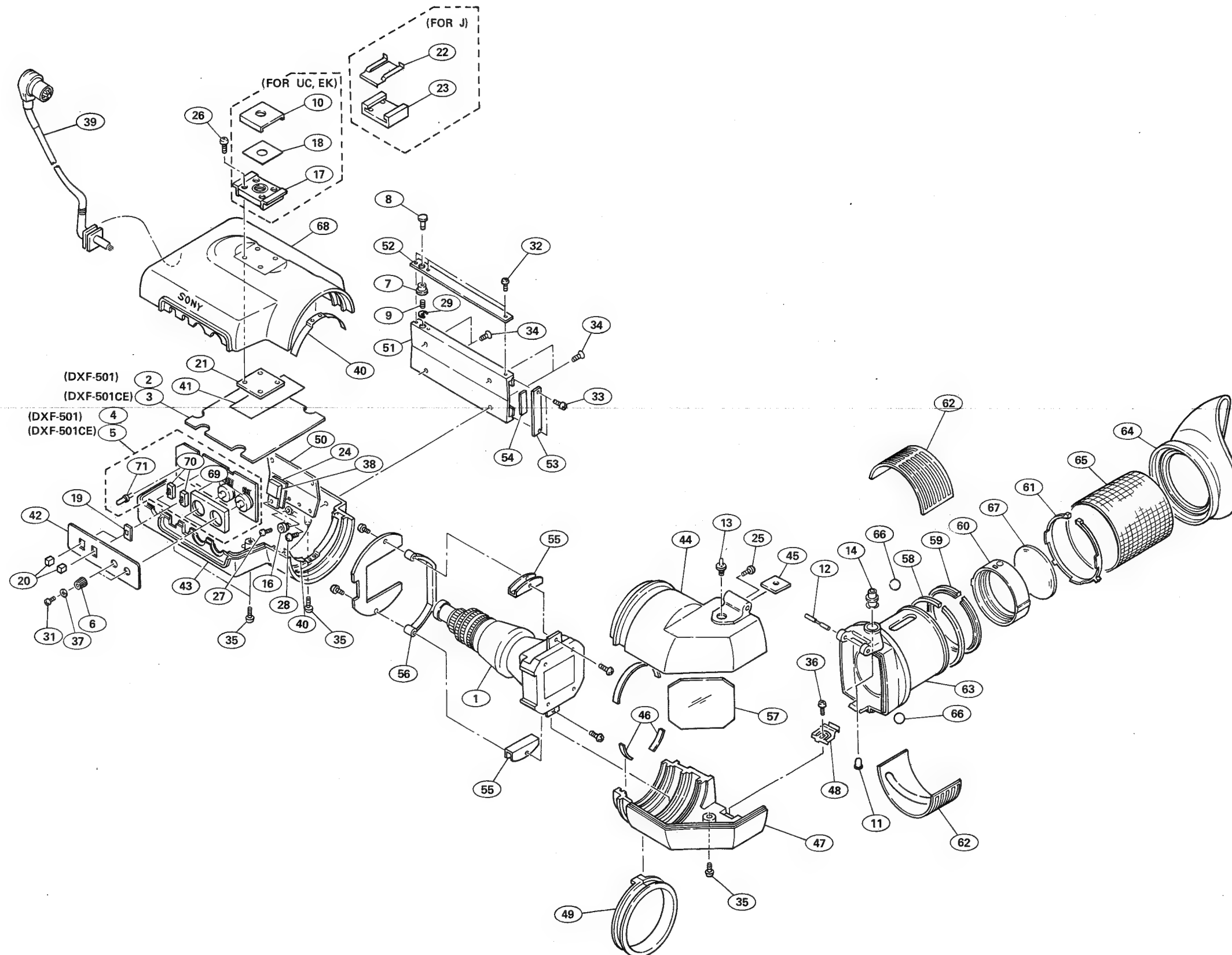
#### 1. Safety Related Component Warning

Components identified by shading marked with  on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes"** or **"standardization of genuine parts."** This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present." Regarding engineering parts and diagrams changes in our engineering department, refer to SONY service bulletins and service manual supplements.
3. The parts marked with "S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Orders for parts marked with "O" will be processed, but allow for additional delivery time.
4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.
5. All capacitors are in micro farads unless otherwise specified.  
All inductors are in micro henries unless otherwise specified.  
All resistors are in ohms.



EXPLODED VIEW



No.	Part No.	SP Description		
1	△ 1-546-078-11	s CRT/DY ASSY	55	9-994-826-01 o STOPPER, PWB
2	1-589-128-11	o MAIN BOARD (for DXF-501)	56	9-994-827-01 o COLLER
3	1-589-128-21	o MAIN BOARD (for DXF-501CE)	57	9-997-916-01 o MIRROR
4	1-589-129-11	o SW BOARD (for DXF-501)	58	9-997-917-01 o SPACER
5	1-589-129-21	o SW BOARD (for DXF-501CE)	59	9-997-918-01 o RING, LOCK
6	2-277-453-00	s KNOB, CONTROL	60	9-997-919-01 o HOLDER A, LENS
7	2-277-456-00	s COLLER, STOPPER	61	9-997-920-01 o HOLDER B, LENS
8	2-277-457-00	s KNOB, STOPPER	62	9-997-921-01 o RING, ADJUSTMENT
9	2-277-466-01	s SPRING, COMPRESSION	63	9-997-922-01 o LID
10	2-277-468-01	o PLATE, ORNAMENTAL, CAMERA, SHOE	64	9-997-923-01 s EYECUP
11	2-381-461-02	s PIN, BLIND	65	9-997-924-01 o RING, RUBBER
12	2-381-462-01	s PIN	66	9-997-925-01 o BALL, STEEL
13	2-381-468-01	s PIN, STOPPER	67	3-680-417-01 s LUPE B, VF
14	2-381-472-02	o STOPPER	68	9-998-810-01 o CASE, TOP
16	2-832-007-00	s BUSHING (K), INSULATING	69	1-230-075-00 s RES, VAR, METAL 2K "CONTR" "BRIGHT"
17	3-657-700-00	s BRACKET, ACCESSORY	70	1-570-845-11 s SWITCH, SLIDE
18	3-672-213-01	o SHEET, ADHESIVE		"TALLY ON/OFF" "PEAKING ON/OFF"
19	3-680-604-01	o PLATE, BLIND	71	9-994-802-01 s DIODE SLH-56VT
20	3-680-605-00	o CAP, SLIDE		
21	3-688-709-01	s NUT, PLATE, SHOE		
24	3-703-037-00	s INSULATOR, TO-220		
25	7-621-255-25	s SCREW +P2X4		
26	7-621-255-52	s SCREW +P2X8		
27	7-621-773-95	s SCREW +B2.6X6		
28	7-621-775-00	s SCREW +B2.6X3		
29	7-624-102-04	s STOP RING, TYPE E		
31	7-627-552-58	s SCREW, PRECISION +P1.7X5		
32	7-627-553-28	s SCREW, PRECISION +P2X2.5		
33	7-627-553-68	s SCREW, PRECISION +P2X6		
34	7-682-248-09	s SCREW +K3X8		
35	7-682-550-09	s SCREW +B3X12		
36	7-685-131-19	s SCREW +BTP2.6X4		
37	7-688-008-04	s WASHER		
38	8-729-385-82	s TRANSISTOR 2SB858		
39	9-994-797-01	s CABLE, VF		
40	9-994-811-01	o SPRING, PLATE		
41	9-994-812-01	o INSULATOR		
42	9-994-813-01	o LABEL, SWITCH		
43	9-994-814-01	o CASE, BOTTOM		
44	9-994-815-01	o HOLDER T, OUTSIDE		
45	9-994-816-01	o PLATE, NUT		
46	9-994-817-01	o MOLT		
47	9-994-818-01	o HOLDER B, OUTSIDE		
48	9-994-819-01	o PIN, LOCK		
49	9-994-820-01	o RING, SLIDE		
50	9-994-821-01	o NUT, PLATE, CASE		
51	9-994-822-01	o GUIDE, VF SLIDE		
52	9-994-823-01	o LABEL, SLIDE		
53	9-994-824-01	o STOPPER		
54	9-994-825-01	o RUBBER, STOPPER		

Ref. No. Part No. SP Description

RESISTOR, CHIP

1/10W

0 - 3.3M (E12) +-5% 1/10W

1-216-295-00	s	RES, CHIP	0	5%	1/10W
1-216-298-00	s	RES, CHIP	2.2	5%	1/10W
1-216-302-00	s	RES, CHIP	2.7	5%	1/10W
1-216-304-00	s	RES, CHIP	3.3	5%	1/10W
1-216-306-00	s	RES, CHIP	3.9	5%	1/10W
1-216-308-00	s	RES, CHIP	4.7	5%	1/10W
1-216-309-00	s	RES, CHIP	5.6	5%	1/10W
1-216-311-00	s	RES, CHIP	6.8	5%	1/10W
1-216-313-00	s	RES, CHIP	8.2	5%	1/10W
1-216-001-00	s	RES, CHIP	10	5%	1/10W
1-216-003-00	s	RES, CHIP	12	5%	1/10W
1-216-005-00	s	RES, CHIP	15	5%	1/10W
1-216-007-00	s	RES, CHIP	18	5%	1/10W
1-216-009-00	s	RES, CHIP	22	5%	1/10W
1-216-011-00	s	RES, CHIP	27	5%	1/10W
1-216-013-00	s	RES, CHIP	33	5%	1/10W
1-216-015-00	s	RES, CHIP	39	5%	1/10W
1-216-017-00	s	RES, CHIP	47	5%	1/10W
1-216-019-00	s	RES, CHIP	56	5%	1/10W
1-216-021-00	s	RES, CHIP	68	5%	1/10W
1-216-023-00	s	RES, CHIP	82	5%	1/10W
1-216-025-00	s	RES, CHIP	100	5%	1/10W
1-216-027-00	s	RES, CHIP	120	5%	1/10W
1-216-029-00	s	RES, CHIP	150	5%	1/10W
1-216-031-00	s	RES, CHIP	180	5%	1/10W
1-216-033-00	s	RES, CHIP	220	5%	1/10W
1-216-035-00	s	RES, CHIP	270	5%	1/10W
1-216-037-00	s	RES, CHIP	330	5%	1/10W
1-216-039-00	s	RES, CHIP	390	5%	1/10W
1-216-041-00	s	RES, CHIP	470	5%	1/10W
1-216-043-00	s	RES, CHIP	560	5%	1/10W
1-216-045-00	s	RES, CHIP	680	5%	1/10W
1-216-047-00	s	RES, CHIP	820	5%	1/10W
1-216-049-00	s	RES, CHIP	1k	5%	1/10W
1-216-051-00	s	RES, CHIP	1.2k	5%	1/10W
1-216-053-00	s	RES, CHIP	1.5k	5%	1/10W
1-216-055-00	s	RES, CHIP	1.8k	5%	1/10W
1-216-057-00	s	RES, CHIP	2.2k	5%	1/10W
1-216-059-00	s	RES, CHIP	2.7k	5%	1/10W
1-216-061-00	s	RES, CHIP	3.3k	5%	1/10W
1-216-063-00	s	RES, CHIP	3.9k	5%	1/10W
1-216-065-00	s	RES, CHIP	4.7k	5%	1/10W
1-216-067-00	s	RES, CHIP	5.6k	5%	1/10W
1-216-069-00	s	RES, CHIP	6.8k	5%	1/10W
1-216-071-00	s	RES, CHIP	8.2k	5%	1/10W
1-216-073-00	s	RES, CHIP	10k	5%	1/10W
1-216-075-00	s	RES, CHIP	12k	5%	1/10W
1-216-077-00	s	RES, CHIP	15k	5%	1/10W
1-216-079-00	s	RES, CHIP	18k	5%	1/10W
1-216-081-00	s	RES, CHIP	22k	5%	1/10W

Ref. No. Part No. SP Description

1-216-083-00	s	RES, CHIP	27k	5%	1/10W
1-216-085-00	s	RES, CHIP	33k	5%	1/10W
1-216-087-00	s	RES, CHIP	39k	5%	1/10W
1-216-089-00	s	RES, CHIP	47k	5%	1/10W
1-216-091-00	s	RES, CHIP	56k	5%	1/10W
1-216-093-00	s	RES, CHIP	68k	5%	1/10W
1-216-095-00	s	RES, CHIP	82k	5%	1/10W
1-216-097-00	s	RES, CHIP	100k	5%	1/10W
1-216-099-00	s	RES, CHIP	120k	5%	1/10W
1-216-101-00	s	RES, CHIP	150k	5%	1/10W
1-216-103-00	s	RES, CHIP	180k	5%	1/10W
1-216-105-00	s	RES, CHIP	220k	5%	1/10W
1-216-107-00	s	RES, CHIP	270k	5%	1/10W
1-216-109-00	s	RES, CHIP	330k	5%	1/10W
1-216-111-00	s	RES, CHIP	390k	5%	1/10W
1-216-113-00	s	RES, CHIP	470k	5%	1/10W
1-216-115-00	s	RES, CHIP	560k	5%	1/10W
1-216-117-00	s	RES, CHIP	680k	5%	1/10W
1-216-119-00	s	RES, CHIP	820k	5%	1/10W
1-216-121-00	s	RES, CHIP	1.0M	5%	1/10W
1-216-123-00	s	RES, CHIP	1.2M	5%	1/10W
1-216-125-00	s	RES, CHIP	1.5M	5%	1/10W
1-216-127-00	s	RES, CHIP	1.8M	5%	1/10W
1-216-129-00	s	RES, CHIP	2.2M	5%	1/10W
1-216-131-00	s	RES, CHIP	2.7M	5%	1/10W
1-216-133-00	s	RES, CHIP	3.3M	5%	1/10W

Ref. No. Part No. SP Description

MAIN BOARD

1-589-128-11 o MOUNTED CIRCUIT BOARD  
"MAIN"  
9-994-794-01 s CRT

C20 9-994-781-01 s TANTALUM 47 16V  
C21 1-163-038-11 s CHIP CERAMIC 0.1 25V  
C22 1-163-038-11 s CHIP CERAMIC 0.1 25V  
C23 1-126-157-11 s ELECT 10 20% 16V  
C24 1-124-464-11 s ELECT 0.22 20% 50V  
  
C26 9-994-780-01 s P-P CONDENCER 0.0047  
C28 1-124-438-11 s ELECT 1 20% 50V  
C29 1-124-584-11 s ELECT 100 20% 10V  
C30 1-131-347-00 s TANTALUM 1 10% 35V  
C31 1-126-157-11 s ELECT 10 20% 16V  
  
C32 1-163-133-11 s CHIP CERAMIC 470PF 5% 50V  
C33 1-126-157-11 s ELECT 10 20% 16V  
C34 1-126-162-11 s ELECT 3.3 20% 50V  
C35 1-163-088-11 s CHIP CERAMIC 0.1 25V  
C36 1-124-455-00 s ELECT 100 20% 16V  
  
C37 9-994-777-01 s ELECT 220 6.3V  
C38 1-130-481-11 s CAP,PE TEREPHTHALATE  
0.0068 5% 50V  
C40 1-163-088-11 s CHIP CERAMIC 0.1 25V  
C43 1-163-088-11 s CHIP CERAMIC 0.1 25V  
C44 9-994-782-01 s TANTALUM 47 16V  
  
C46 1-126-162-11 s ELECT 3.3 20% 50V  
C48 9-994-783-01 s 0.0056 100V  
C49 9-994-778-01 s ELECT 22 63V  
C50 9-994-784-01 s 0.0015 1K  
C51 1-163-088-11 s CHIP CERAMIC 0.1 25V  
  
C52 9-994-779-01 s ELECT 56 16V  
C53 1-163-088-11 s CHIP CERAMIC 0.1 25V  
C54 1-163-088-11 s CHIP CERAMIC 0.1 25V  
C55 1-163-088-11 s CHIP CERAMIC 0.1 25V

CN4 9-994-791-01 o RECEPTACLE, 7P  
CN7 9-994-792-01 o RECEPTACLE, 3P  
CN8 9-994-793-01 o RECEPTACLE, 2P

D2 8-719-914-42 s DA204K  
D4 8-719-911-19 s 1SS119  
D5 9-994-773-01 s ERA15-06  
D6 9-994-774-01 s 1SS136  
D7 8-719-948-45 s ERA22-08

Ref. No. Part No. SP Description

HLC 1-459-823-11 s COIL,HORIZONTAL LINEARITY

IC2 8-759-300-28 s HA11423MP: HITACHI

IC3 8-759-100-94 s  $\mu$ PC358G2:

Q10 8-729-881-23 s 2SC2812-L7  
Q11 8-729-881-23 s 2SC2812-L7  
Q12 8-729-100-76 s 2SA812  
Q20 8-729-881-23 s 2SC2812-L7  
Q21 9-994-771-01 s 2SD1220

Q22 8-729-119-00 s 2SK612  
Q23 8-729-162-43 s 2SB624-BV3

R43  $\Delta$  1-216-109-11 s CHIP 330K 5% 1/10W  
R44  $\Delta$  1-216-083-11 s CHIP 27K 5% 1/10W  
R60  $\Delta$  1-216-057-11 s CHIP 2.2K 5% 1/10W  
R61  $\Delta$  1-216-057-11 s CHIP 2.2K 5% 1/10W  
R66  $\Delta$  9-994-785-01 s 10M  
R67  $\Delta$  9-994-786-01 s 91K

R69  $\Delta$  1-216-081-11 s CHIP 22K 5% 1/10W  
R70  $\Delta$  1-216-079-11 s CHIP 18K 5% 1/10W  
R72  $\Delta$  1-216-081-11 s CHIP 22K 5% 1/10W  
R73  $\Delta$  1-216-081-11 s CHIP 22K 5% 1/10W

RV10 9-994-787-01 s 5K  
RV11 9-994-788-01 s 5K  
RV12 9-994-789-01 s 200  
RV13 9-994-790-01 s 500

RV20  $\Delta$  1-228-459-11 s METAL 10K  
RV21  $\Delta$  1-228-458-11 s METAL 5K

T1  $\Delta$  1-439-419-11 s FBT

Ref. No. Part No. SP Description

SW BOARD

1-589-129-11 o MOUNTED CIRCUIT BOARD "SW"  
(J,UC)  
1-589-129-21 o MOUNTED CIRCUIT BOARD "SW"  
(EK)

C1 1-124-438-11 s ELECT 1 20% 50V  
C3 1-124-584-11 s ELECT 100 20% 10V  
C4 1-124-584-11 s ELECT 100 20% 10V  
C5 1-126-154-11 s ELECT 47 20% 6.3V  
C6 1-124-438-11 s ELECT 1 20% 50V  
C7 1-124-462-11 s ELECT 10 20% 16V  
C8 1-163-113-11 s CHIP CERAMIC 68PF 5% 50V  
C9 1-163-105-11 s CHIP CERAMIC 33PF 5% 50V  
C10 1-163-015-11 s CHIP CERAMIC 0.0033 10%  
50V  
C11 1-163-038-11 s CHIP CERAMIC 0.1 25V

CN1 9-994-803-01 o 8P  
CN2 9-994-804-01 o 3P  
CN3 9-994-805-01 o 5P  
CN4 9-994-806-01 o 7S  
CN5 9-994-807-01 o 2P

CP 9-994-808-01 s PROTECTORS ICP-N10(EK)

D1 8-719-914-43 s DAN202K

IC1  $\Delta$  8-759-630-27 s M5236ML: MITSUBISHI

L1 9-994-800-01 s 100 $\mu$ H  
L2 9-994-801-01 s 47 $\mu$ H

LED1 9-994-802-01 s SLH-56VT

Q2 8-729-881-23 s 2SC2812-L7  
Q3 8-729-881-23 s 2SC2812-L7  
Q4 8-729-881-23 s 2SC2812-L7  
Q5 1-806-828-11 s 2SC2814  
Q6 9-994-796-01 s 2SC3722K  
Q7 9-994-796-01 s 2SC3722K  
Q8 8-729-881-23 s 2SC2812-L7

Ref. No. Part No. SP Description

R2  $\Delta$  9-994-799-01 s CHIP 24K 5% 1/10W  
R3  $\Delta$  1-216-064-11 s CHIP 4.3K 5% 1/10W

RV1  $\Delta$  1-228-473-11 s METAL 5K  
RV2 1-230-075-11 s CARBON 2K "CONTR"  
RV3 1-228-475-11 s METAL 20K  
RV4 1-226-368-11 s CARBON 10K "BRIGHT"

S1 1-570-845-11 s SLIDE "PEAKING ON/OFF"  
S2 1-570-845-11 s SLIDE "TALLY ON/OFF"

LED BOARD

1-589-127-11 o MAUNTED CIRCUIT BOARD  
"LED"

9-994-810-01 o LED PWB

CN9 9-994-809-01 o RECEPTACLE, 5P

LED2 8-719-800-25 s TLR109A  
LED3 8-719-800-25 s TLR109A  
LED4 8-719-800-25 s TLR109A  
LED5 8-719-800-19 s TLO102A

FRAME

Q1 8-729-315-63 s 2SB856

PACKING MATERIAL AND ACCESSORIES

3-166-610-01 o CARTON, INDIVIDUAL(UC)  
3-166-612-01 o CARTON, INDIVIDUAL(EK)  
3-699-152-01 o CUSHION, UPPER  
3-699-153-01 o CUSHION, LOWER  
3-701-627-01 o BAG, POLY

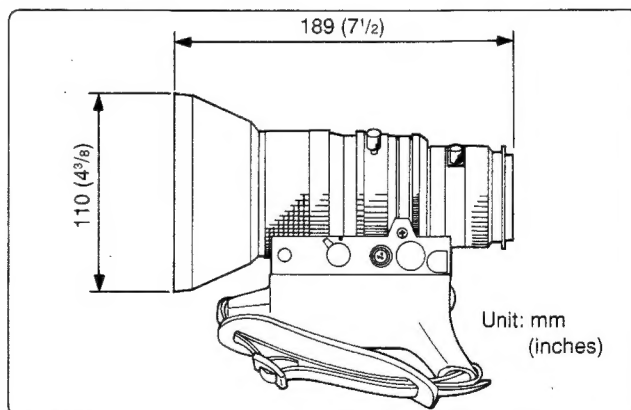
## ZOOM LENS



### SPECIFICATIONS

Focal length	7.5 to 90 mm
Zoom	Manual and motorized, selectable Zooming ratio: 12 ×
Maximum aperture ratio	1.4
Iris control	Manual and auto, selectable 1.4 to 16 and C (closed)
Range of object field (at the distance of 1.1 m)	W (wide angle): 660 × 880 (24 1/2 × 34 3/4 inches) T (telephoto): 55 × 73 mm T (telephoto): (2 1/4 × 3 inches)
Minimum object distance	1.1 m
Filter thread	72 mm dia., 0.75 pitch
Mount	Bayonet mount, 1/2 inch
Weight	About 1.2 kg (2 lb 4 oz) with lens hood
Supplied accessory	Operating instructions (1)

### Dimensions



Design and specifications are subject to change without notice.

# SONY®

## SERVICE MANUAL

No.	Part No.	SP Description
1	3-707-247-01	o LEVER, ZOOM
2	3-708-108-01	o HOOD
3	3-708-109-01	o CAP, HOOD
4	3-708-110-01	o CAP, DUST

